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LONGWOOD MEDICAL RESEARCH CENTER

ENVIRONMENTAL NOTIFICATION FORM

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April 18, 1989

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PREPARED FOR:

THE BRIGHAM & WOMEN'S HOSPITAL, INC.
75 Francis St.
Boston, MA 02115

PREPARED BY:

~~PROPERTY OF BRA LIBRARY~~

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ENGINEERS, ENVIRONMENTAL CONSULTANTS & PLANNERS

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ENGINEERS, ENVIRONMENTAL CONSULTANTS & PLANNERS

HMM Ref. No. 3129/2817E

April 18, 1989

Dear Reviewer:

Enclosed is an Environmental Notification Form for the Longwood Medical Research Center proposed by The Brigham and Women's Hospital, Inc. The proposed project involves the construction of a 99,659 square foot (FAR gross) research building. To create space for the new building, 58,400 sf (FAR gross) will be demolished, resulting in a net increase of 41,259 sf (FAR gross).

The project has been fully reviewed by the Boston Redevelopment Authority and Boston Transportation Department. It is now subject to MEPA as a result of a HEFA financing request.

If you have any questions, please call me. Comments should be submitted to the MEPA office within 30 days of the notice of this ENF in the Environmental Monitor:

Secretary: EOEA
100 Cambridge Street – Room 2000
Boston, MA 02202
ATTN: MEPA Unit

Very truly yours,

Peggy Briggs

Margaret B. Briggs

MBB/c
enclosure

336 Baker Avenue • Concord • Massachusetts • 01742 • (508) 371-1692 • FAX: (508) 371-2468

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ENVIRONMENTAL NOTIFICATION FORM

I. SUMMARY

A. Project Identification

1. Project Name Longwood Medical Research Center
Address/Location 221 Longwood Avenue, Site of the former Boston Lying-In Hospital for Women
City/Town Boston
2. Project Proponent The Brigham & Women's Hospital, Inc.
Address 75 Francis Street, Boston, MA
3. Est. Commencement 1989. Est. Completion 1991.
Approx. Cost $ 30,000,000. Status of Project Design 50 % Complete.
4. Amount (if any) of bordering vegetated wetlands, salt marsh, or tidelands to be dredged, filled, removed, or altered (other than by receipt of runoff) as a result of the project.
0 acres 0 square feet.
5. This project is categorically included and therefore requires preparation of an EIR.
Yes ______ No X ?

B. Narrative Project Description

Describe project and site.

The Brigham & Women's Hospital, Inc. is proposing to construct a new research laboratory wing of 99,659 gross FAR square feet on the site of the former Boston Lying-In Hospital for Women. The new facilities will replace space currently located in the former residence hall portion of the BLI complex. This portion was determined to be inadequate for laboratory purposes; therefore, its 58,400 FAR sf will be razed and rebuilt. Thus, 41,259 FAR sf of new building area will be added to this portion to yield the proposed 99,659 FAR sf. At six stories above the Longwood Avenue grade, the proposed height and exterior wall will be comparable to the scale and detail of the existing Main Building and Richardson House wing of the BLI complex. Also included in the scope is a redesigning of the existing courtyard to provide a main arrival space for the new center and to accommodate handicapped access to the complex.

The Longwood Medical Research Center (LMRC) will provide space for research laboratories, support areas, and facilities to supplement present research uses in the BLI complex. The additional research space will allow for the continued growth of research and the necessary interaction between clinical patient care and research activity at The Brigham & Women's Hospital, Inc.

Service and loading facilities for the new and existing structures will be provided through construction of a two bay service dock at the rear of the complex, which will be accessed directly from Avenue Louis Pasteur.

Parking for this research space addition will be provided at several off-site locations. Details regarding parking are provided in the Transportation Access Plan.

The project has been reviewed by the Boston Redevelopment Authority under Article 31 requirements; a Transportation Access Plan was reviewed along with the Project Notification Form.

Copies of the complete ENF may be obtained from (proponent or agent):
Name: Margaret B. Briggs Firm/Agency: HMM Associates, Inc.
Address: 336 Baker Avenue, Concord, MA Phone No. (508) 371-1692

1986 THIS IS AN IMPORTANT NOTICE. COMMENT PERIOD IS LIMITED.
For Information, call (617) 727-5830

C. List the State or Federal agencies from which permits or other actions have been/will be sought:

Agency Name	Permit	Date filed; file no.
DEQE	DWPC Sewer connection permit	
DEQE	Air Source registration permit	
DEQE	Public water supply permit	
DEQE	Cross connection and backflow prevention	
MWRA	Sewer extension and connection permit	
DPH	Certificate of registration for equipment emitting ionization radiation	
DPH	License for facilities using needles or hypodermic	

D. List any government agencies or programs from which the proponent will seek financial assistance for this project:

Agency Name	Funding Amount
Massachusetts Health and Education Facilities Agency	$35,000,000 (including $5,000,000 in debt service reserve)

E. Areas of potential impact (complete Sections II and III first, before completing this section).

1. Check all areas in which, in the proponent's judgment, an impact of this project may occur. Positive impacts, as well as adverse impacts, may be indicated.

	Construction Impacts	Long Term Impacts
Inland Wetlands		
Coastal Wetlands/Beaches		
Tidelands		
Traffic		X (minor)
Open Space/Recreation		
Historical/Archaeological		
Fisheries/Wildlife		
Vegetation/Trees		
Agricultural Lands		
Water Pollution		
Water Supply/Use		X
Solid Waste	X	X
Hazardous Materials		
Air Pollution		
Noise	X	
Wind/Shadow		
Aesthetics		
Growth Impacts		
Community/Housing and the Built Environment		

Other (Specify)____________________________

2. List the alternatives which have been considered.

Brigham and Women's Hospital reviewed various alternative sites on the hospital campus before deciding on the BLI Hospital site.

F. Has this project been filed with EOEA before? No X Yes ____ EOEA No. ____

G. WETLANDS AND WATERWAYS

1. Will an Order of Conditions under the Wetlands Protection Act (c.131s.40) or a License under the Waterways Act (c.91) be required?
   Yes ____ No X
2. Has a local Order of Conditions been:
   a. issued? Date of issuance NA ; DEQE File No. ____ .
   b. appealed? Yes ____ ; No ____ .
3. Will a variance from the Wetlands or Waterways Regulations be required? Yes ____ ; No ____ .
   NA

II. PROJECT DESCRIPTION

A. Map; site plan. Include an original 8½ x 11 inch or larger section of the most recent U.S.G.S. 7.5 minute series scale topographic map with the project area location and boundaries clearly shown. If available, attach a site plan of the proposed project.

B. State total area of project: 0.4 acres.
Estimate the number of acres (to the nearest 1/10 acre) directly affected that are currently:

1. Developed .... 0.4 acres
2. Open Space/ Woodlands/Recreation 0 acres
3. Wetlands .... 0 acres
4. Floodplain .... 0 acres
5. Coastal Area .... 0 acres
6. Tidelands .... 0 acres
7. Productive Resources
   Agriculture .... 0 acres
   Forestry .... 0 acres
8. Other .... 0 acres

C. Provide the following dimensions, if applicable:

	Existing	Increase	Total
Length in miles	NA		
Number of Housing Units	NA		
Number of Stories	5	1	6
Gross Floor Area in square feet (FAR)	*58,400	41,259	99,659
Number of parking spaces	24	0	24
Total of Daily vehicle trips to and from site (Total Trip Ends)	810	200	1010
Estimated Average Daily Traffic on road(s) serving site	41,300	200	41,500
1. Longwood Ave	9,500	110	9,610
2. Huntington Ave.	26,500	90	26,590
3. Avenue Louis Pasteur	5,300	NA	5,300

* This amount to be demolished and replaced.

D. TRAFFIC PLAN. If the proposed project will require any permit for access to local roads or state highways, attach a sketch showing the location and layout of the proposed driveway(s).

See Attachment 1.

III. ASSESSMENT OF POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS

Instructions: Explain direct and indirect adverse impacts, including those arising from general construction and operations. For every answer explain why significant adverse impact is considered likely or unlikely to result. Positive impact may also be listed and explained.

Also, state the source of information or other basis for the answers supplied. Such environmental information should be acquired at least in part by field inspection.

A. Open Space and Recreation

1. Might the project affect the condition, use, or access to any open space and/or recreation area?

Explanation and Source:

No. The proposed LMRC will serve to strengthen the street front at Longwood Avenue and improve existing open space of the BLI complex courtyard.

2. Is the project site within 500 feet of any public open space, recreation, or conservation land?

Explanation and Source:

There are no open spaces near the project site, except the quadrangle of the Harvard Medical School and the forecourt of the BLI complex. The project is designed to enhance and complement these open spaces.

B. Historic and Archaeological Resources

1. Might any site or structure of historic significance be affected by the project? (Prior consultation with Massachusetts Historical Commission is advised.)

Explanation and Source:

There are no properties with any known historic or archaeological significance within the area of potential project impact. The nearest properties now listed on the state Register are the Isabella Stewart Gardner Museum at 280 The Fenway and the Back Bay Fens (sections of) in excess of 700 feet northeasterly and northerly of the planned LMRC in a highly–developed urban institutional setting. There will be no known adverse impact on these properties resulting from the planned facility. A copy of the PNF was filed with the MHC. See Attachment 2 for further details.

Source: MHC files.

2. Might any archaeological site be affected by the project? (Prior consultation with Massachusetts Historical Commission is advised.)

Explanation and Source:

No archaeological site will be affected because the site of the proposed LMRC has already been developed.

Source: MHC files.

C. Ecological Effects

1. Might the project significantly affect fisheries or wildlife, especially any rare or endangered species? (Prior consultation with the Massachusetts Natural Heritage Program is advised).

Explanation and Source:

No. The site is completely developed at present; therefore, the new structures will have no impact on any fisheries or wildlife.

2. Might the project significantly affect vegetation, especially any rare or endangered species of plant? (Prior consultation with the Massachusetts Natural Heritage Program is advised.)

(Estimate approximate number of mature trees to be removed: 2)

Explanation and Source:

The LMRC will largely replace existing structures or paved areas: Approximately 10 large caliper replacement trees will be planted to replace those removed.

3. Agricultural Land. Has any portion of the site been in agricultural use within the last 15 years? If yes, specify use and acreage.

Explanation and Source:

No agricultural land will be impacted by the LMRC project, since the site is already completely developed.

D. Water Quality and Quantity

1. Might the project result in significant changes in drainage patterns?

Explanation and Source:

The LMRC project site is presently occupied by structures and paved areas. The project will not increase storm water runoff into the city storm water system, or result in any significant changes in drainage patterns.

2. Might the project result in the introduction of any pollutants, including sediments, into marine waters, surface fresh waters or ground water?

Explanation and Source:

The LMRC project will not result in changes to its stormwater runoff volumes or characteristics. No other water pollutants are expected.

3. Does the project involve any dredging? No X Yes ____ Volume ____ . If 10,000 cy or more, attach completed Standard Application Form for Water Quality Certification, Part I (314 CMR 9.02(3), 9.90, DEQE Division of Water Pollution Control).

4. Will any part of the project be located in flowed or filled tidelands, Great Ponds, or other waterways? (Prior consultation with the DEQE and CZM is advised.)

Explanation and Source:

No. The project will not impact any tidelands, ponds, or other waterways. This is an inland site not subject to DEQE or CZM regulations.

Source: DEQE files.

5. Will the project generate or convey sanitary sewage? No _____ Yes _X_
If Yes, Quantity: _11,640_ gallons per day
Disposal by: (a) Onsite septic systems .... Yes _____ No _X_
(b) Public sewerage systems (location; average and peak daily flows to treatment works) .... Yes _X_ No _____

Explanation and Source:

Sanitary consumption figures are calculated for the LMRC. The quantity shown does not take into account current utilization in the buildings to be demolished. Thus, this is not an incremental but a final figure.

Source: The Brigham & Women's Hospital, Inc.

6. Might the project result in an increase in paved or impervious surface over a sole source aquifer or an aquifer recognized as an important present or future source of water supply?

Explanation and Source:

No. There will be no increase in paved surface because the site is entirely paved at present. In addition, the site is not over an aquifer.

7. Is the project in the watershed of any surface water body used as a drinking water supply?

Explanation and Source:

No. The City of Boston receives its water from Quabbin and Wachusett Reservoirs.

8. Are there any public or private drinking water wells within a 1/2-mile radius of the proposed project?

Explanation and Source:

No. There are no public or private wells near the proposed site. All surrounding uses are serviced by the MWRA water distribution system.

9. Does the operation of the project result in any increased consumption of water? Yes
Approximate consumption 11,640 gallons per day. Likely water source(s) ______
Explanation and Source:

Yes. The Brigham & Women's Hospital, Inc. receives its water from MWRA. The anticipated average daily total water consumption is 11,640 gpd.

Source: R.W. Sullivan, Inc. (plumbing engineers)

E. Solid Waste and Hazardous Materials

1. Estimate types and approximate amounts of waste materials generated, e.g., industrial, domestic, hospital, sewage sludge, construction debris from demolished structures. How/where will such waste be disposed of?

Explanation and Source:
Demolition of existing structures and excavation for the proposed new construction will result in the generation of certain amounts of rubble, fill material, and unconsolidated soils. The amounts generated by demolition are estimated to be approximately 17,000 cubic yards. These materials will be disposed of in an approved off-site landfill location. The amounts of unconsolidated soils resulting from excavation are estimated at 4,700 cubic yards.

Waste generated by the LMRC is estimated to be approximately 1,500 pounds per day based on current experience in other similar research facilities at Brigham & Women's Hospital. It is noted that this quantity of solid waste is offset by wastes generated by current uses on the site. The project will generate 750 pounds per week of biomedical waste which will be sterilized and incinerated on-site. This waste will be removed by a licensed contractor to an approved site.

Source: The Brigham & Women's Hospital.

2. Might the project involve the generation, use, transportation, storage, release, or disposal of potentially hazardous materials?

Explanation and Source:
Asbestos in the existing buildings to be demolished has been completely removed following State and EPA approved methods, by licensed contractors.

Most recent, detailed estimates indicate that research activities will generate approximately 12 tons of biological waste, 36 gallons of liquid chemical waste, and 2,600 gallons of low-activity radiological waste annually. All such wastes are managed and disposed in accordance with NRC, EPA, and applicable requirements, and NIH guidelines

3. Has the site previously been used for the use, generation, transportation, storage, release, or disposal of potentially hazardous materials?

Explanation and Source:

The proposed LMRC project represents an expansion of current activities and practices on the site and in the surrounding area. There are no new activities proposed.

F. Energy Use and Air Quality

1. Will space heating be provided for the project? If so, describe the type, energy source, and approximate energy consumption.

Explanation and Source:

Yes. The LMRC project will be serviced with steam and chilled water from the Medical Area Total Energy Plant. Approximately 740 M ton hours (kW) of chilled water and 17,800,000 lbs. of steam will be provided annually to the facility.

Source: Tsoi/Kobus & Associates

2. Will the project require process heat or steam? If so, describe the proposed system, the fuel type, and approximate fuel usage.

Explanation and Source:

No. The LMRC project does not involve industrial processes.

3. Does the project include industrial processes that will release air contaminants to the atmosphere? If so, describe the process (type, material released, and quantity released).

Explanation and Source:

This project does not include industrial processes that release contaminants into the atmosphere. Medical research that occurs uses microamounts of chemical material. Research, by its nature, involves occasional repeat experiments. Discharge, therefore, is likely to be low and occasional. Some research involves radiochemicals. NRC discharge limits are not challenged, because continuous monitors are placed in discharge ducts. All applicable EPA and State effluent limits for organic solvents are not exceeded.

Source: The Brigham & Women's Hospital, Inc.

4. Are there any other sources of air contamination associated with the project (e.g. automobile traffic, aircraft traffic, volatile organic compound storage, construction dust)?

Explanation and Source:

Construction activity will generate temporary increases in air contamination, such as CO, NO, and hydro–carbon exhaust emissions. Construction related dust will be minimized by wetting and other standard dust control procedures. Post–construction project–related traffic will result in minimal long–term increases in these emissions. Further discussion is provided in Attachment 3.

5. Are there any sensitive receptors (e.g. hospitals, schools, residential areas) which would be affected by air contamination caused by the project?

Explanation and Source:

The hospitals, schools, and residential areas within and around the Longwood Medical Area are sensitive receptors which could be affected by air contaminations and construction dust.

G. Noise

1. Might the project result in the generation of noise?

(Include any source of noise during construction or operation, e.g., engine exhaust, pile driving, traffic.)

Explanation and Source:

Yes. Noise levels generated during the construction phase of the project, due to demolition and construction equipment, will comply with City of Boston's ordinances. Noise and vibration during foundation installation will be minimized through the use of spread footing foundations. Long–term noise increases are not anticipated as a result of project–related traffic. Noise impacts associated with building mechanical systems should decrease as a result of enclosing building mechanical systems in the basement of the new building. Noise is discussed in further detail in Attachment 3.

Source: Tsoi/Kobus & Associates.

2. Are there any sensitive receptors (e.g., hospitals, schools, residential areas) which would be affected by any noise caused by the project?

Explanation and Source:

Yes. The hospitals, schools and residential areas in and around the Longwood Medical Area would be affected by construction noise from the project. However, the use of shallow, spread footing foundations and masonry exterior walls will minimize the necessity for large and noisy equipment on-site. Also, the building courtyard will be the primary staging area in order to shield off-site locations from construction equipment noise.

3. Is the project a sensitive receptor, sited in an area of significant ambient noise?

Explanation and Source:

No. The project, as a medical research center, is not itself a sensitive receptor.

H. Wind and Shadow

1. Might the project cause wind and shadow impacts on adjacent properties?

Explanation and Source:

No. The proposed project's massing and height is very similar to that of the existing structure on the site. It will stand at the eastern periphery of the existing site, with the BLI courtyard opening to the south. As such, shadows produced by the new center will fall on the proponent's own land and adjacent parking areas (see Attachments). Thus, it is anticipated that the project will not adversely affect or alter existing wind or shadow patterns on or around the site.

I. Aesthetics

1. Are there any proposed structures which might be considered incompatible with existing adjacent structures in the vicinity in terms of size, physical proportion and scale, or significant differences in land use?

Explanation and Source:

No. The proposed LMRC building is designed to closely assimilate the footprint, massing, height, and scale of the existing BLI complex. Since the project involves hospital research space, the proposed structure will be compatible with adjacent structures in use.

2. Might the project impair visual access to waterfront or other scenic areas?

Explanation and Source:

No. The project will not impair visual access to waterfront or other scenic areas.

IV. CONSISTENCY WITH PRESENT PLANNING

Discuss consistency with current federal, state and local land use, transportation, open space, recreation and environmental plans and policies. Consult with local or regional planning authorities where appropriate.

This project has been designed to be consistent with all known planning initiatives for the area. The project has been extensively reviewed by the BRA under its Article 31 process. The BRA has approved the project, and rezoning has been granted by the Board of Zoning Appeals of the City of Boston. The project has been reviewed by the Boston Transportation Department. A Transportation Access Plan has been submitted to the BTD. The project is also consistent with ongoing planning efforts undertaken by the Medical Area Service Corporation (MASCO).

A FINDINGS AND CERTIFICATION

A. The public notice of environmental review has been/will be published in the following newspaper(s):

(NAME)	Boston Globe	(Date)	

B. This form has been circulated to all agencies and persons as required by 301 CMR 11.24.

4/18/89
Date

Nicholas J Johnson
Signature of Responsible Officer or Project Proponent

Nicholas J. Johnson
Name (print or type)

Address 75 Francis Street
Boston, MA. 02115

Telephone Number 732-5566

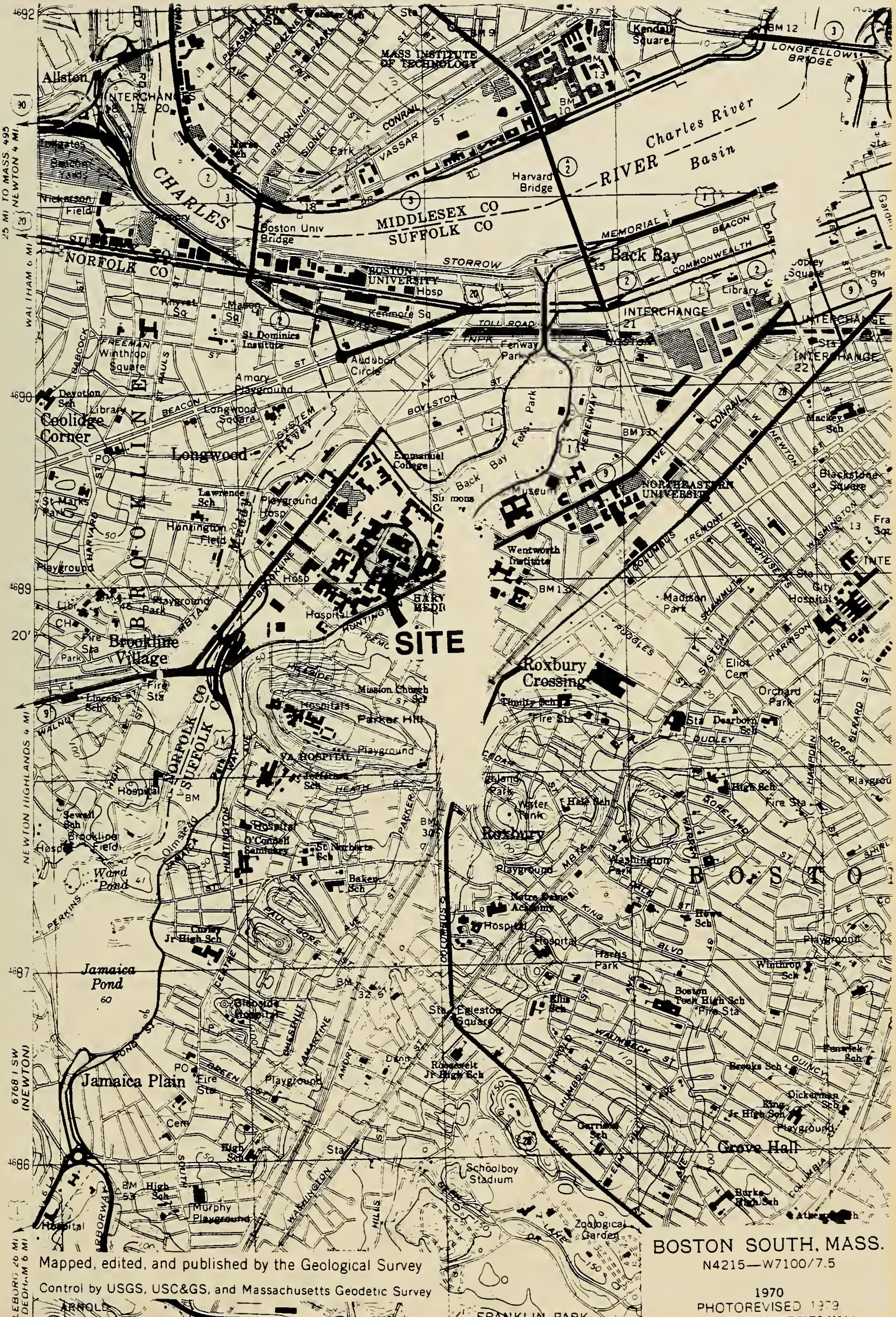
Date

Peggy Briggs sco
Signature of person preparing ENF (if different from above)

Margaret B. Briggs
Name (print or type)

Address 336 Baker Avenue
Concord, MA 01742

Telephone Number (508) 371-1692



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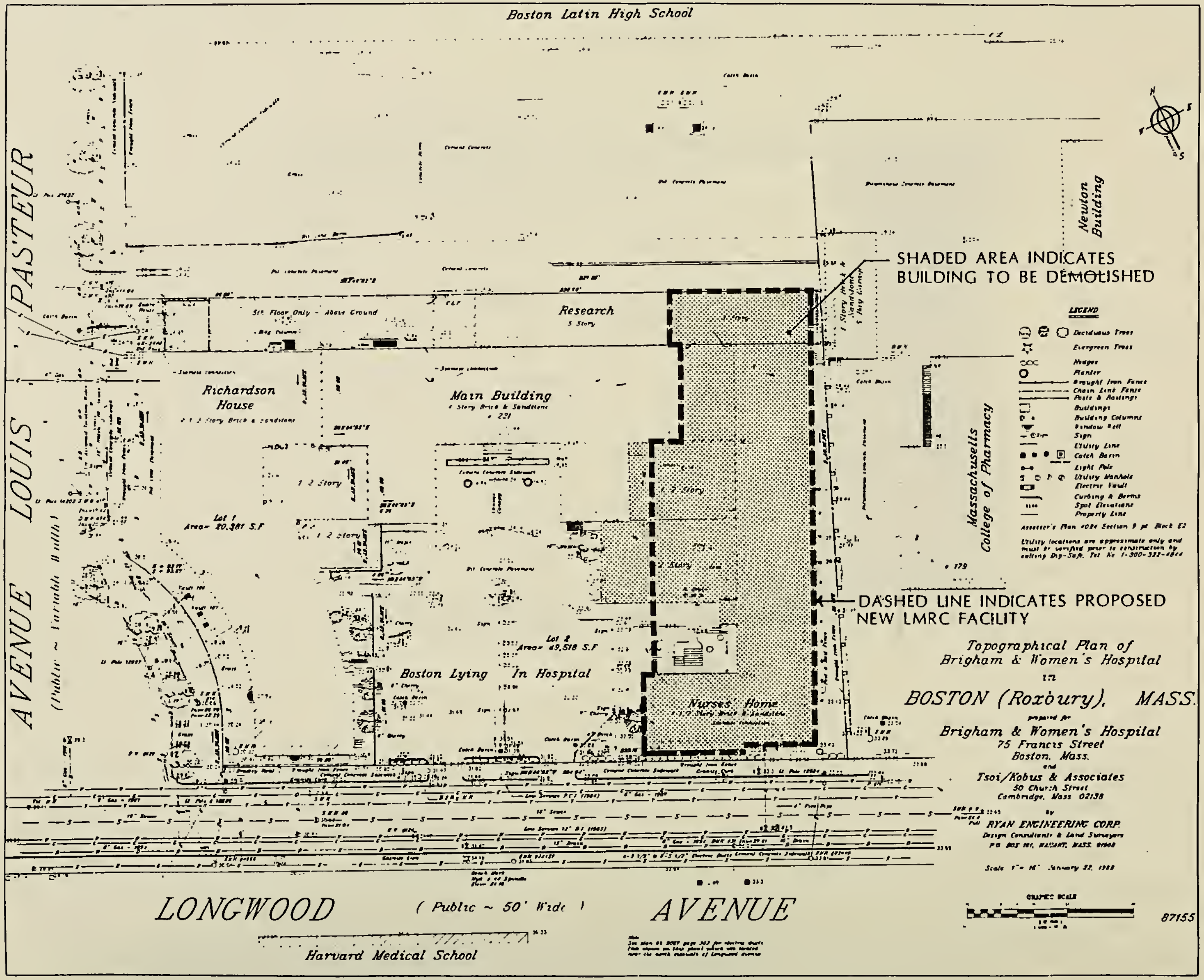


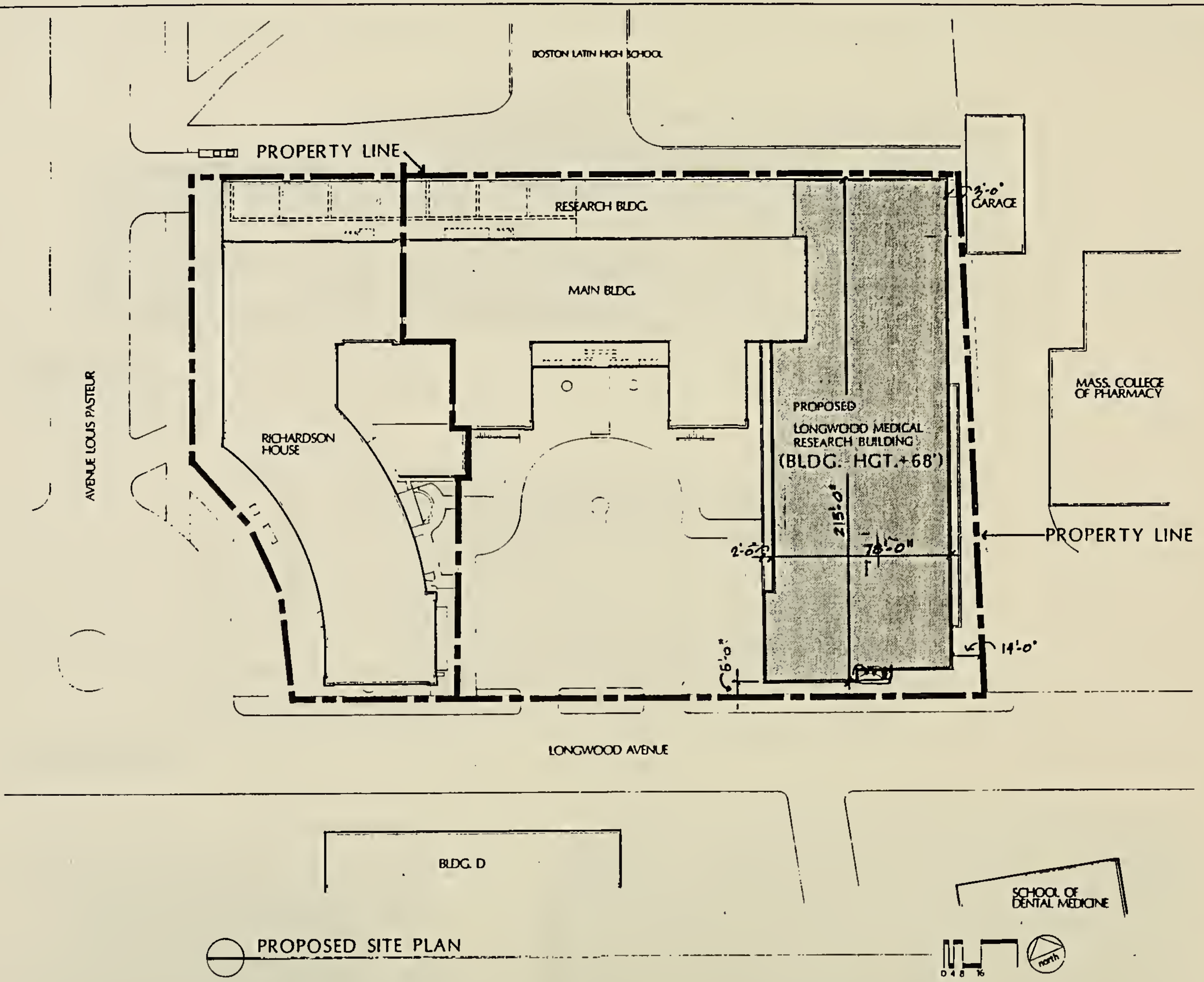
TK&A

TSOI/KOBUS&ASSOCIATES
Architects Cambridge, MA

L·M·R·C
Brigham & Women's Hospita

EXIST. SITE PLAN

2



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Architects Cambridge, MA

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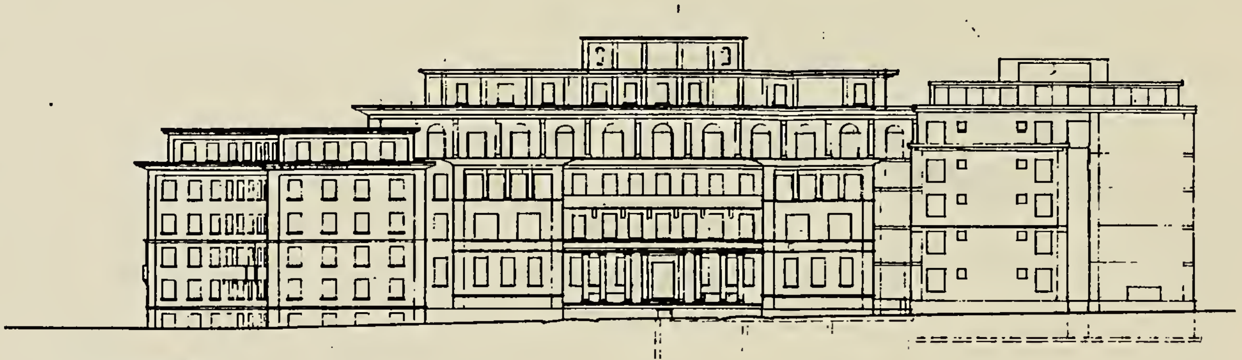
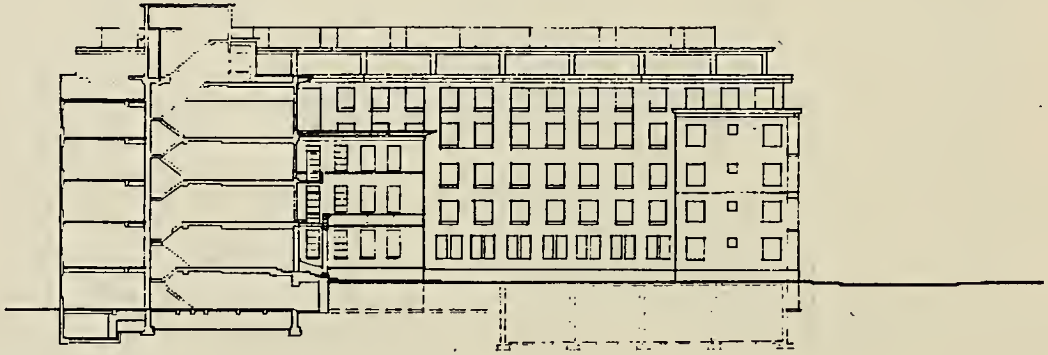
PROPOSED
SITE PLAN

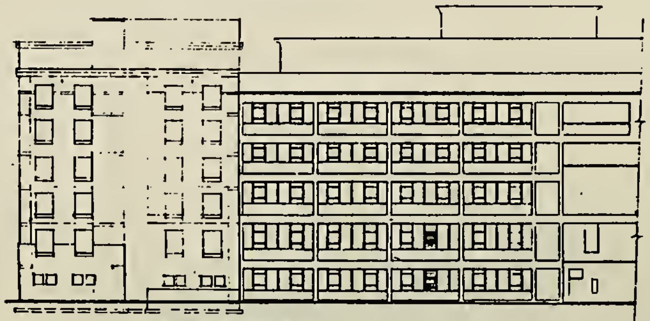
3



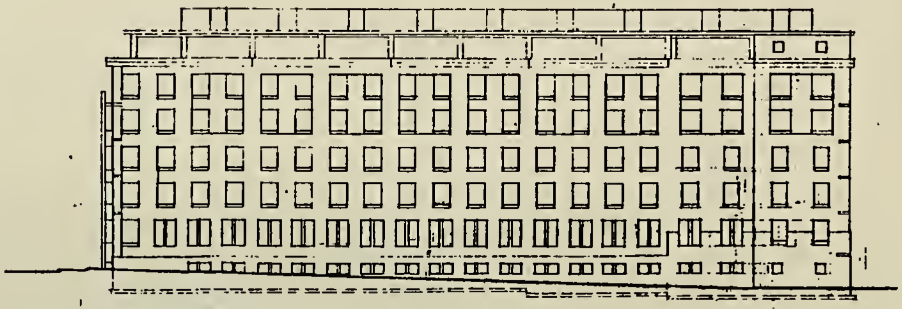
SOUTH ELEVATION



WEST ELEVATION



NORTH ELEVATION



EAST ELEVATION

TK&A

TSOI/KOBUS&ASSOCIATES
Architects Cambridge, MA

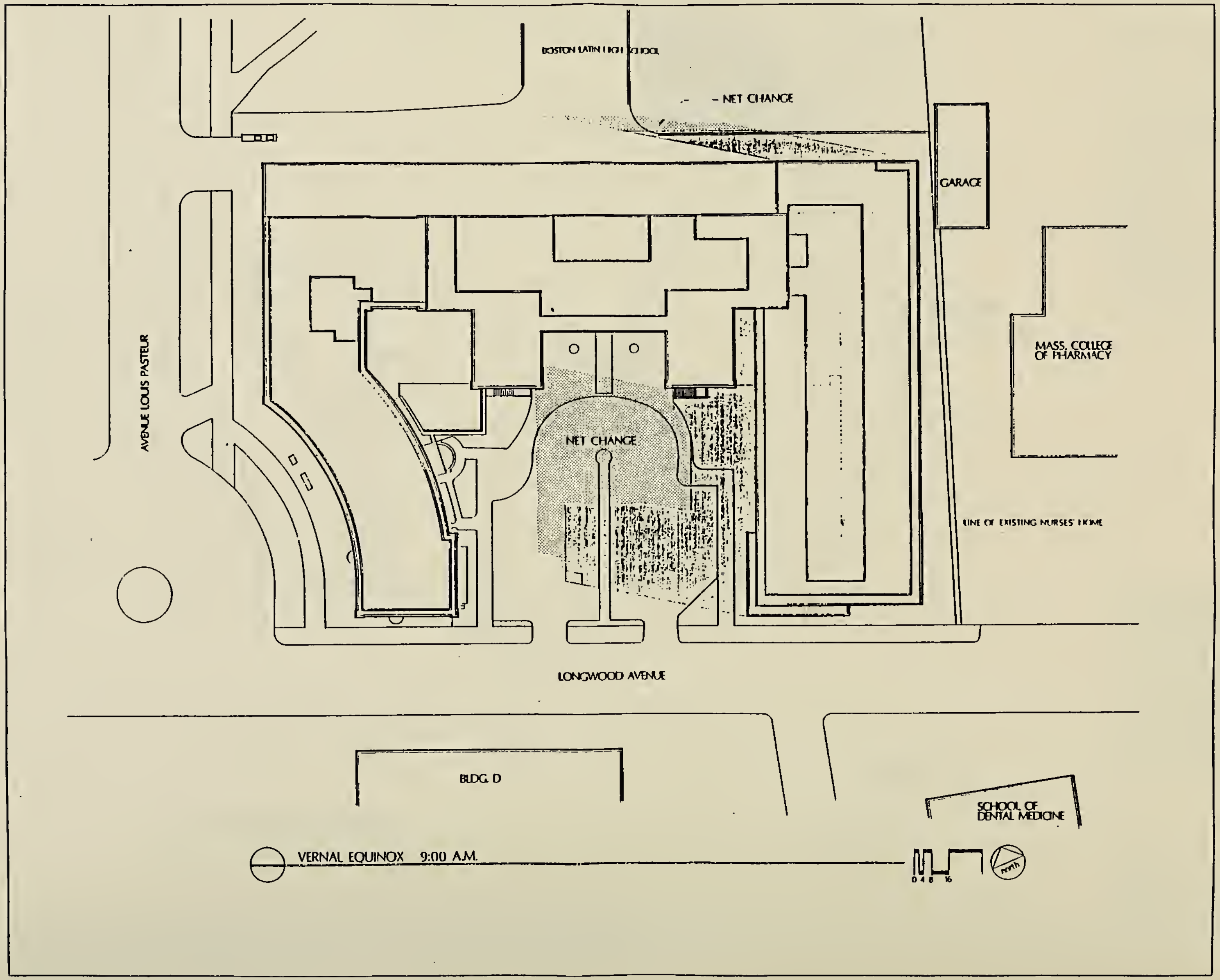
L·M·R·C
Brigham & Women's Hospital

Revisions

Drawing Title
BLDG. ELEVATIONS

Job Number
Drawn By
Checked
Scale
Date

Drawing No.
8



VERNAL EQUINOX 9:00 A.M.

TK&A

TSOI/KOBUS&ASSOCIATES
Architects Cambridge MA

L·M·R·C
Brigham & Women's Hospital

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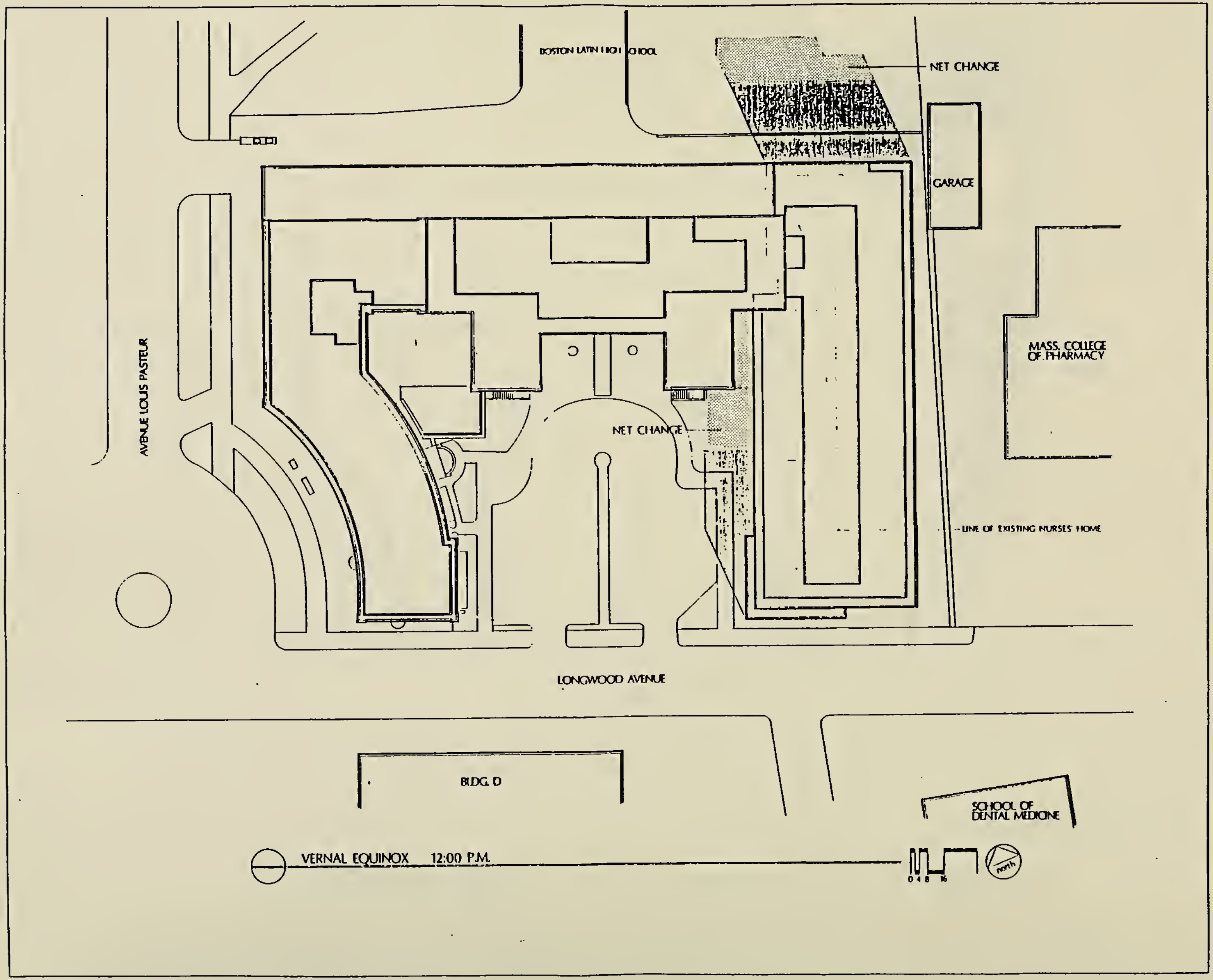
SHADOW STUDY

14



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TSOI/KOBUS&ASSOCIATES
Architects Cambridge, MA

L·M·R·C
Brigham & Women's Hospital

[illegible]
Cambridge, MA
Structural Engineer

[illegible]
Boston, MA
HVAC Engineer

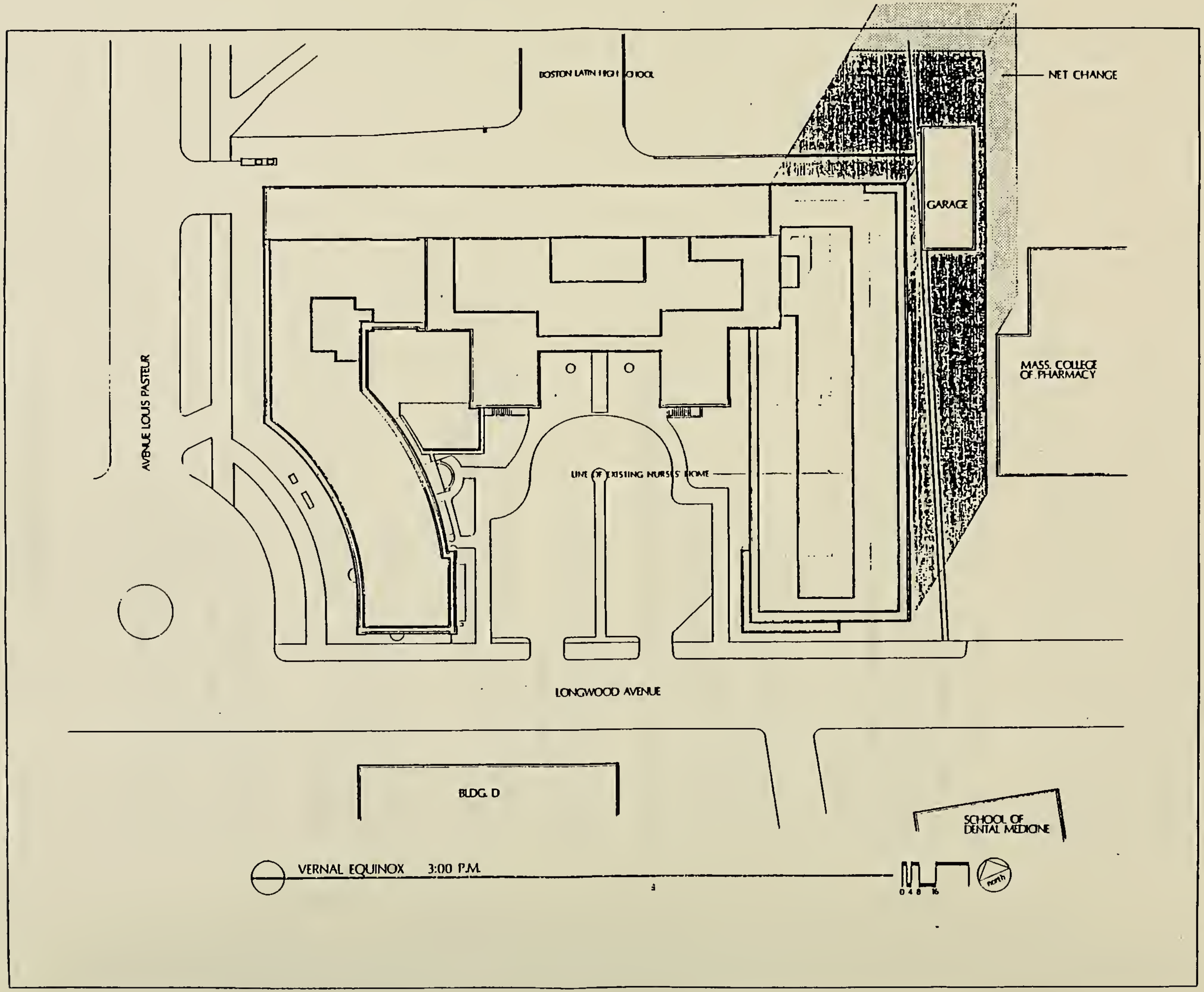
[illegible]
Boston, MA
Electrical Engineer

[illegible]
Boston, MA
Plumbing and Fire Protection Engineer

[illegible]
[illegible]
Construction Manager

Drawing Title
SHADOW STUDY.

Drawing No.
15



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TSOI/KOBUS&ASSOCIATES
Architects Cambridge, MA

L·M·R·C
Brigham & Women's Hospital

SHADOW STUDY

16

ENF CIRCULATION

1. Secretary of Environmental Affairs
   100 Cambridge Street, 20th Floor
   Boston, Massachusetts 02202
   Attention: MEPA Unit

2. Department of Environmental Quality Engineering
   One Winter Street
   Boston, Massachusetts 02108

3. Department of Environmental Quality Engineering
   Division of Water Pollution Control
   One Winter Street
   Boston, Massachusetts 02108

4. Department of Environmental Quality Engineering
   Division of Air Quality Control
   One Winter Street
   Boston, Massachusetts 02108

5. Regional Environmental Engineer
   Department of Environmental Quality Engineering
   Metropolitan Boston/Northeast Regional Office
   5 Commonwealth Avenue
   Woburn, Massachusetts 01801

6. Department of Environmental Quality Engineering
   Division of Water Pollution Control
   Metropolitan Boston/Northeast Regional Office
   5 Commonwealth Avenue
   Woburn, Massachusetts 01801

7. Department of Environmental Quality Engineering
Division of Air Quality Control
Metropolitan Boston/Northeast Regional Office
5 Commonwealth Avenue
Woburn, Massachusetts 01801

8. Executive Office of Communities & Development
State Clearinghouse
100 Cambridge Street, 9th Floor
Boston, Massachusetts 02202

9. Massachusetts Historical Commission
80 Boylston Street
Boston, Massachusetts 02116

10. Metropolitan Area Planning Council
110 Tremont Street
Boston, Massachusetts 02108

11. Department of Public Works–District 8
400 D Street
Boston, Massachusetts 02210

12. Boston Redevelopment Authority
City Hall
Boston, Massachusetts 02108

13. Massachusetts Water Resources Authority
100 First Avenue
Charlestown Navy Yard
Charlestown, Massachusetts 02129

14. Executive Office of Transportation & Construction
10 Park Plaza, Room 3510
Boston, Massachusetts 02202

15. Department of Public Works
10 Park Plaza, Room 4260
Boston, Massachusetts 02202

16. Massachusetts Bay Transportation Authority
10 Park Plaza, 6th Floor
Boston, Massachusetts 02116-3966

17. Department of Transportation
One City Hall Square
City Hall
Boston, Massachusetts 02201

18. Landmarks Commissiom
One City Hall Square
City Hall
Boston, Massachusetts 02201

19. Department of Environmental Quality Engineering
Division of Hazardous Material
One Winter Street
Boston, Massachusetts 02108

20. Department of Public Health
150 Tremont Street
Boston, Massachusetts 02111

ATTACHMENT 1

TRAFFIC PLAN

ATTACHMENT 1

The proposed project is expected to create very few trips to the area. The project is incorporated within the Transportation Master Plan completed for Brigham & Women's Hospital in April, 1989, by Vanasse, Hangen, Brustlin, Inc.* The summary of the Transportation Master Plan is reproduced on the following pages.

In addition, a Transportation Access Plan (T.A.P.) has been submitted to the Boston Transportation Department for the LMRC. This plan delineates trips, parking supply and transportation management measures for the LMRC.

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*Transportation Master Plan - Brigham and Women's Hospital, Boston, MA, Vanasse, Hangen, Brustlin, Inc., April, 1989.

BRIGHAM
AND
WOMEN'S
HOSPITAL

75 Francis Street
Boston, Massachusetts 02115

Phone:

March 20, 1989

Andrew J. McClurg, A.I.C.P.
Senior Transportation Planner
Transportation Department
City of Boston
Room 732
Boston City Hall
Boston, MA 02201

Dear Mr. McClurg:

By letter dated March 6, 1989 I forwarded a signed copy of a Transportation Plan Agreement in connection with the Hospital's planned Longwood Medical Research Center (LMRC). Request you substitute the attached page four (4) of this document which has been revised as a result of the completion of the Transportation Component of the Hospital's Master Plan. We expect to forward the Transportation Master Plan to you this week.

It is clear, from the statistics provided in the Master Plan, that our acquisition within the last year of 337 additional parking spaces far exceeds the additional demands expected as a result of the LMRC occupancy. These spaces are located at:

Servicenter Garage, 80 Francis Street....... 42 spaces
Mass College of Art, 364 Brookline Ave...... 20 spaces
Wentworth Lot, 80 Prentiss Street.......... 50 spaces
Lansdowne St. Garage, 49 Lansdowne St........225 spaces

In addition, the Hospital has recently acquired 55 parking spaces at Back Bay Manor located near the intersection of Longwood and Huntington Avenues. Our intention in the acquisition of Back Bay Manor was to solve a short term need for parking spaces during the construction of the LMRC plus provide additional parking to our other employees. Our original plan as stated in the LMRC Transportation Access Plan was to use the Massachusetts College of Art parking spaces further north on Huntington Avenue. Subsequently,

the Commonwealth of Massachusetts revoked the rights to use this property. If the short term use of Back Back Manor represents a significant issue to City agencies or the community, we can accommodate our short-term construction need by internal shuffling of our current parking assets.

Again, we believe that our plan represents an effective plan to mitigate parking impacts resulting from the construction or operation of the LMRC.

We would appreciate receiving comments on the Transportation Access Plan Agreement as soon as possible. Thank you for your cooperation.

Sincerely,

N J Johnson

Nicholas J. Johnson
Vice President
Administrative Services

cc: Michael O'Connell
Edward Shamon
L. James Wiczai
Kristians Veinbergs

Attachment

SUMMARY

The Brigham and Women's Hospital (BWH) Transportation Master Plan, prepared in conjunction with its Institutional Master Plan, describes the existing transportation, parking, and pedestrian systems, future parking needs, and proposed demand management and traffic mitigation strategies.

A. TRAFFIC CONDITIONS

The hospital is located in the Longwood Medical Area (LMA) of Boston, adjacent to the Mission Hill neighborhood. Primary access to the hospital is provided by Francis Street with two access points to parking and drop-off centers, one at the main hospital entrance (West Plaza) and the other at the Ambulatory Services (ASB II) Garage. The section of Francis Street adjacent to the hospital's main entrance carries about 10,700 vehicles per weekday. Morning peak hour volumes are lower than afternoon and evening peak hour volumes since the morning peak volume is composed primarily of commuter traffic, while the afternoon and evening peak volumes include patients and visitors as well as commuters.

Traffic volumes along Francis Street are quite stable between the hours of 1:00 PM and 6:00 PM on a typical weekday. Francis Street volumes are not especially high relative to capacity, but congestion exists due to turning vehicles, on-street parking, pedestrian crossings, and unsignalized intersections.

B. HOSPITAL PROFILE

The hospital employs about 5,400 people and has about 2,850 physician affiliates. Registered nurses are the largest group and comprise 30 percent of the hospital employees, followed by clerical employees, who comprise 22 percent. Only 73 percent of

the staff (6,010 employees and physicians) work at the hospital on a typical weekday. (This is the sum of all shifts.) Tenant and contractor employees, patients, and visitors are another 4,054 persons, which brings the total number of daily weekday hospital users to about 10,060 persons.

There are approximately 2,335 parking spaces controlled by BWH and currently available for use by their staff, patients, and visitors. Ninety-two percent of these spaces are located within walking distance of the hospital while the others are accessed by shuttle bus. The primary source of staff parking supply is the Mission Park Garage with a capacity of 1,525 spaces. Parking for patients and visitors is provided in the ASB II Garage at 45 Francis Street below the hospital's ambulatory services building. This facility has 240 spaces including 15 handicap spaces.

C. TRANSPORTATION SURVEY RESULTS

Transportation patterns were identified from a series of questionnaire and interview surveys. The overall response rate was 25 percent, with a slightly higher rate (31 percent) for the staff. The survey results for morning (7:30 to 9:59) mode of arrival indicate that 38 percent of the staff commute by public transportation, 49 percent travel by automobile (with an average of 1.3 persons per vehicle), and almost 13 percent walk to work.

The current parking demand was also estimated from the survey results. The existing peak staff parking demand (2,424 vehicles at 3:00 PM) exceeds the staff parking capacity by about 350 spaces. Most of the excess demand is likely served at non-BWH garages. The peak patient/visitor parking demand (442 vehicles at 11:00 AM) exceeds the supply at the ASB II Garage by about 200 vehicles. This apparent deficit is not a problem since the actual vehicle accumulation as counted in the garage showed an underutilization of the parking supply.

Public transportation usage was also estimated based upon the survey results. The data show that usage of the system by BWH users amounts to 6 percent of the system capacity serving the area.

D. PEDESTRIAN ACTIVITY

As might be expected, pedestrian volumes are heavy crossing Francis Street during two peaks in the day, morning and mid-afternoon. These high volumes, however, are not sustained over the course of the day since they consist mainly of employees traveling to and from the Mission Park Garage.

An origin-destination survey was conducted near the ASB II entrance to measure the amount of pedestrian cut-through traffic. Of 117 trips surveyed between noon and 4:00 PM, 102 trips began or ended at BWH, while 15 traveled through the hospital to other destinations.

E. FUTURE GROWTH

The hospital's ten-year development plan results in a population growth of about 9 percent from 10,064 to 10,963 over the same time period. The largest component of the increase is expected to be patients at 16 percent. Physicians and employee categories are expected to increase by 10 percent and 7 percent, respectively. In conjunction with this growth, 237 additional staff parking spaces will be provided (225 as early as 1989) for a total of 2,311 staff spaces.

Based on the forecast growth in hospital services, the peak staff parking demand is expected to increase by 7 percent (from 2,424 to 2,599). Due to the additional parking supply planned, the staff parking deficit is expected to decline from 350 to 288.

The patient/visitor peak parking demand is expected to increase by 10 percent (approximately 44 vehicles). Complete elimination of the parking deficit is not desirable because the parking shortage encourages the use of alternative travel modes.

F. RECOMMENDED MANAGEMENT/MITIGATION PLAN

There are two components to this plan: demand reduction strategies and traffic operations improvements. The demand reduction strategies are targeted toward staff parking levels and include:

- Increased parking fees,
- Preferential parking for vanpools and carpools,
- Transit subsidies for employees,
- Promotion of ridesharing, and
- Alternative work schedules.

Recommended traffic operations improvements include the addition of police control at the intersection of Francis Street/Vining Street during peak hours to facilitate the safe crossing of pedestrians while maintaining acceptable vehicular flow. Signalization is not warranted according to federal guidelines. Other improvements, designed to address areawide traffic flow deficiencies, are presented in the Longwood Medical Area Transportation Study, a comprehensive study completed in 1988 by the Medical Area Service Corporation (MASCO) and Vanasse Hangen Brustlin, Inc. (VHB), and funded by BWH and the other MASCO member institutions.

ATTACHMENT 2

HISTORIC RESOURCES

BRIGHAM
AND
WOMEN'S
HOSPITAL

75 Francis Street
Boston, Massachusetts 02115

Phone:

March 31, 1989

Ms. Valerie A. Talmage
Executive Director
Massachusetts Historical Commission
80 Boylston Street Room 310
Boston, MA 02116

RE: Longwood Medical Research Center (LMRC)

Dear Ms. Talmage:

In compliance with 950 CMR 71.00, a Project Notification Form for the referenced LMRC Project is forwarded for your review and comment. Please contact the Hospital's Project Director, Edward Shamon (tel. 732-5808) if further information or clarification is needed.

Sincerely,

Nicholas J. Johnson (K.V.)

Nicholas J. Johnson
Vice President, Administrative Services

cc: Michael O'Connell, RSB
Richard Kobus, TKA

MASSACHUSETTS HISTORICAL COMMISSION

PROJECT NOTIFICATION FORM

Project Name: LONGWOOD MEDICAL RESEARCH CENTER

Location/Address: 221 LONGWOOD AVENUE

City/Town/Zip: BOSTON, MASSACHUSETTS 02115

PROJECT PROPONENT

Name: THE BRIGHAM AND WOMEN'S HOSPITAL INC.

Address: 75 FRANCIS STREET

City/Town/Zip: BOSTON, MASSACHUSETTS 02115

AGENCY LICENSE OR FUNDING FOR THE PROJECT.

AGENCY NAME
TYPE OF LICENSE OR FUNDING:

DEQE	DWPC Sewer connection permit
DEQE	Air Source registration permit
DEQE	Public water supply permit
DEQE	Cross connection and backflow prevention
MWRA	Sewer extension and connection permit
DPH	Certificate of registration for equipment emitting ionization radiation
DPH	License for facilities using needles or hypodermic syringes
HEFA	(under consideration)

PROJECT DESCRIPTION:

Brigham and Women's Hospital proposes to construct a medical research laboratory, to be called the Longwood Medical Research Center (LMRC), containing 99,659 (FAR) gross square feet at the site of the former Boston Lying-In Hospital (BLI). To make room for the new facility, it is proposed to demolish 58,400 (FAR) gross square feet of existing structures. The structures planned for demolition and the proposed LMRC are described below. The resulting structure increments this site by 41,259 (FAR) gross square feet bringing the total complex to a 3.0 FAR. The locus of the site is shown on the attached USGS quadrangle map (Exhibit #1).

DOES THE PROJECT INCLUDE DEMOLITION? IF SO, SPECIFY NATURE OF DEMOLITION AND DESCRIBE THE BUILDINGS WHICH ARE PROPOSED FOR DEMOLITION.

The structures to be removed (as shown on the attached site plan, Exhibit 2) consists of:

a) The four story wood frame east wing (formerly a residents hall).
b) The one and one-half story connecting wing which connects the east wing to the main building.
c) The one-half story courtyard wing which was formerly used as a hospital kitchen and dining room.
d) Three bays of the three story research wing at the north-east corner of the BLI complex.

The area to be removed amounts to 58,400 (FAR) gross square feet.

DOES THE PROJECT INCLUDE REHABILITATION OF ANY EXISTING BUILDING? IF SO, SPECIFY NATURE OF REHABILITATION AND DESCRIBE THE BUILDINGS WHICH ARE PROPOSED FOR REHABILITATION.

The proposed LMRC includes the rehabilitation and revitalization of the front courtyard including significant landscaping, pedestrian access ways, and revisions to the front entrance of the BLI complex for accessibility to handicapped people.

DOES THE PROJECT INCLUDE NEW CONSTRUCTION? IF SO, DESCRIBE.

The proposed LMRC will assimilate the existing footprint and massing of the demolished east wing. At six-stories above Longwood Avenue, its height will be comparable to the massing of the Main Building at the BLI complex. The new building will be constructed on spread concrete footing. The frame work will be reinforced concrete with flat concrete slabs. The exterior walls will be made of veneer masonry with punched windows to approximate the scale and detail of the BLI west wing known as Richardson House. The intent of the project is to provide a complimentary building mass and complete the forecourt of the BLI as shown on the attached plans and elevations (Exhibit 2).

TO THE BEST OF YOUR KNOWLEDGE, ARE ANY HISTORIC OR ARCHAEOLOGICAL PROPERTIES KNOWN TO EXIST WITHIN THE AREA OF POTENTIAL PROJECT IMPACT? IF SO, SPECIFY.

There are no properties with any known historic or archaeological significance within the area of potential project impact. The nearest properties now listed on the state Register are the Isabella Stewart Gardner Museum at 280 The Fenway and the Back Bay Fens (sections of) in excess of 700 feet northeasterly and northerly of the planned LMRC in a highly-developed urban institutional setting. There will be no known adverse impact on these properties resulting from the planned facility.

WHAT IS THE ACREAGE OF THE PROJECT AREA?

Woodland 0 acres
Wetland 0 acres
Flood plain 0 acres
Open space 0 acres
Developed 1.6 acres

Productive Resources:
Agriculture 0 acres
Forestry 0 acres
Mining/Extraction 0 acres
Total project acreage 1.6 acres

WHAT IS THE PRESENT LAND USE OF THE PROJECT AREA?

The proposed new construction will replace demolished structures within a totally developed parcel of land. The BLI complex is used for medical research, non-patient medical offices, and hospital-related support administrative functions.

WHAT HAS BEEN THE PREVIOUS LAND USE OF THE PROJECT AREA?

The proposed site was used as a hospital from 1921 to approximately 1980.

PLEASE ATTACH A COPY OF THE SECTION OF THE USGS QUADRANGLE MAP WHICH CLEARLY MARKS THE PROJECT LOCATION.

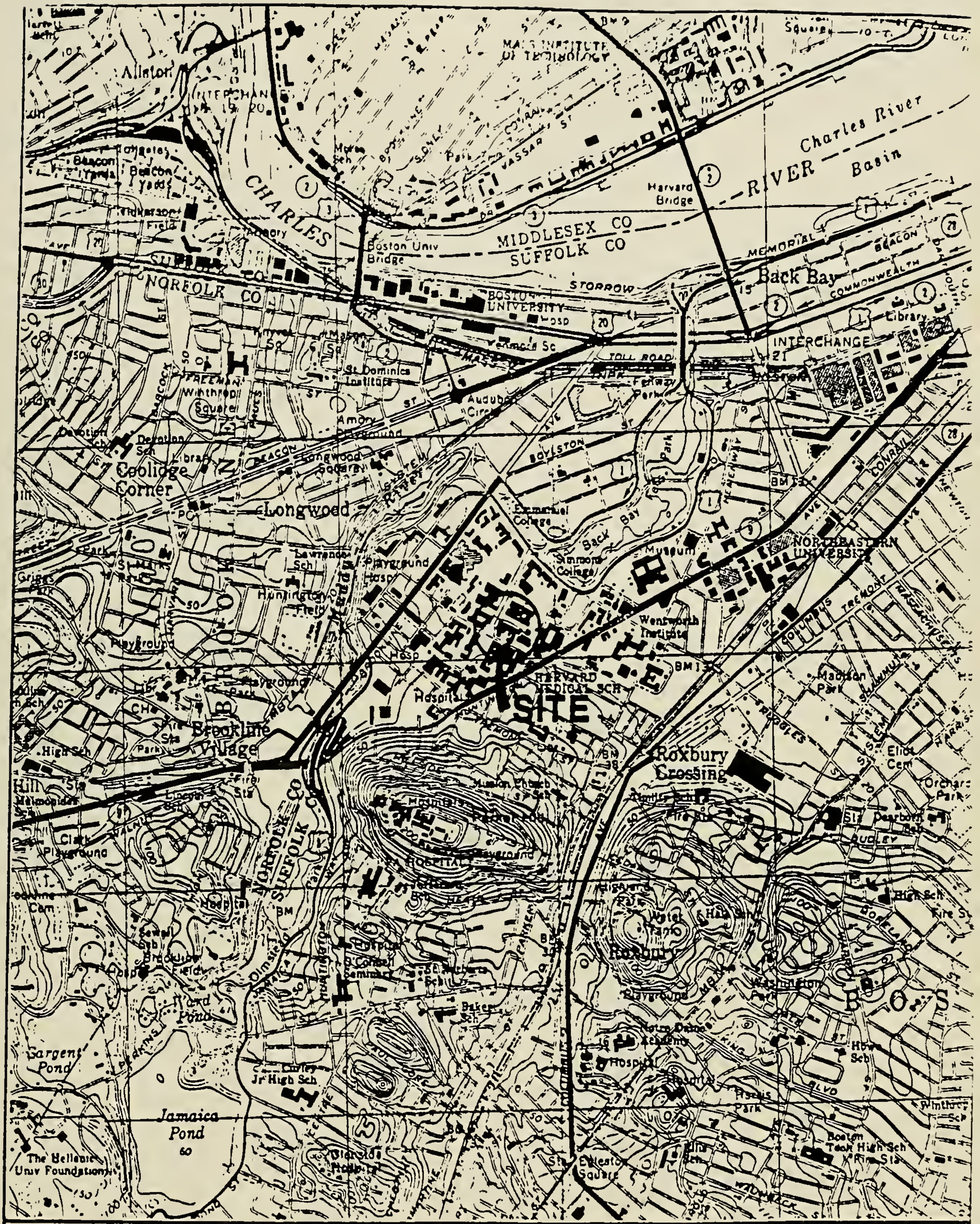
A section of the USGS quadrangle map is attached (Exhibit 1) which shows the project location (site).

THIS FORM HAS BEEN SUBMITTED TO THE MHC IN COMPLIANCE WITH 950 CMR 71.00.

SUBMITTED BY:

Nicholas J. Johnson (K.V.) ______ 3-31-89
Date

Nicholas J. Johnson
Vice President, Administrative Services
The Brigham and Women's Hospital Inc.
75 Francis Street
Boston, MA 02115
(617) 732-5566



SITE COORDINATES: 42°20'11"N 71°06'10"W

U.S.G.S. QUADRANGLE: BOSTON SOUTH, MA

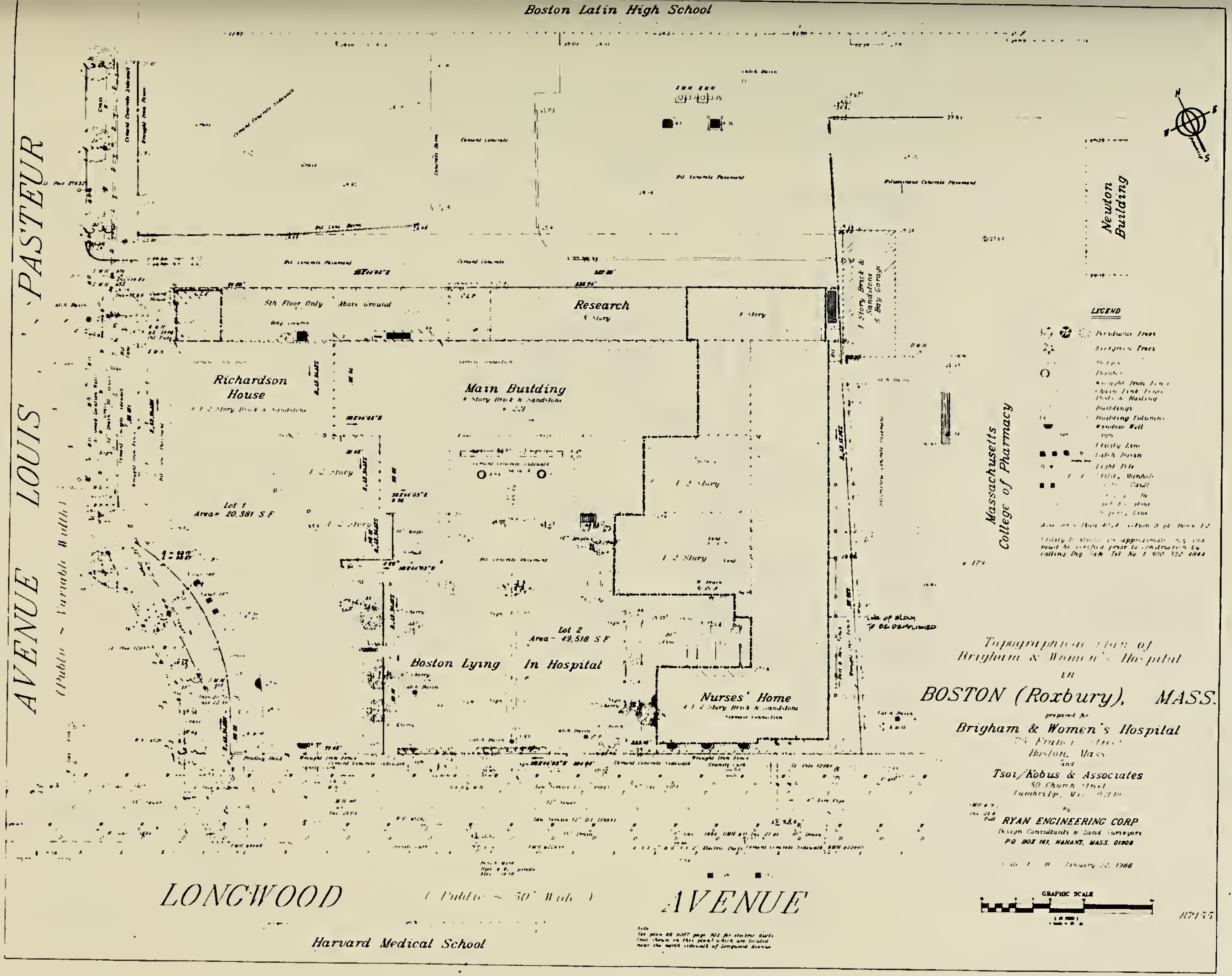
LONGWOOD MEDICAL RESEARCH CENTER

BRIGHAM AND WOMEN'S HOSPITAL
BOSTON, MASSACHUSETTS

PROJECT LOCUS

APPROX. SCALE 1:25,000

EXHIBIT 1



TK&A

TSOI/KOBUS&ASSOCIATES
Architects Cambridge, MA

L·M·R·C
Brigham & Women's Hospita
DEMOLITION & MECHANICAL RELOCATION

WILLIAM A. BERRY & SON INC
Danvers, MA
Construction Manager

WEIDLINGER ASSOCIATES
Cambridge, MA
Structural Engineer

TMP CONSULTING ENGINEERS
Boston, MA
HVAC Engineer

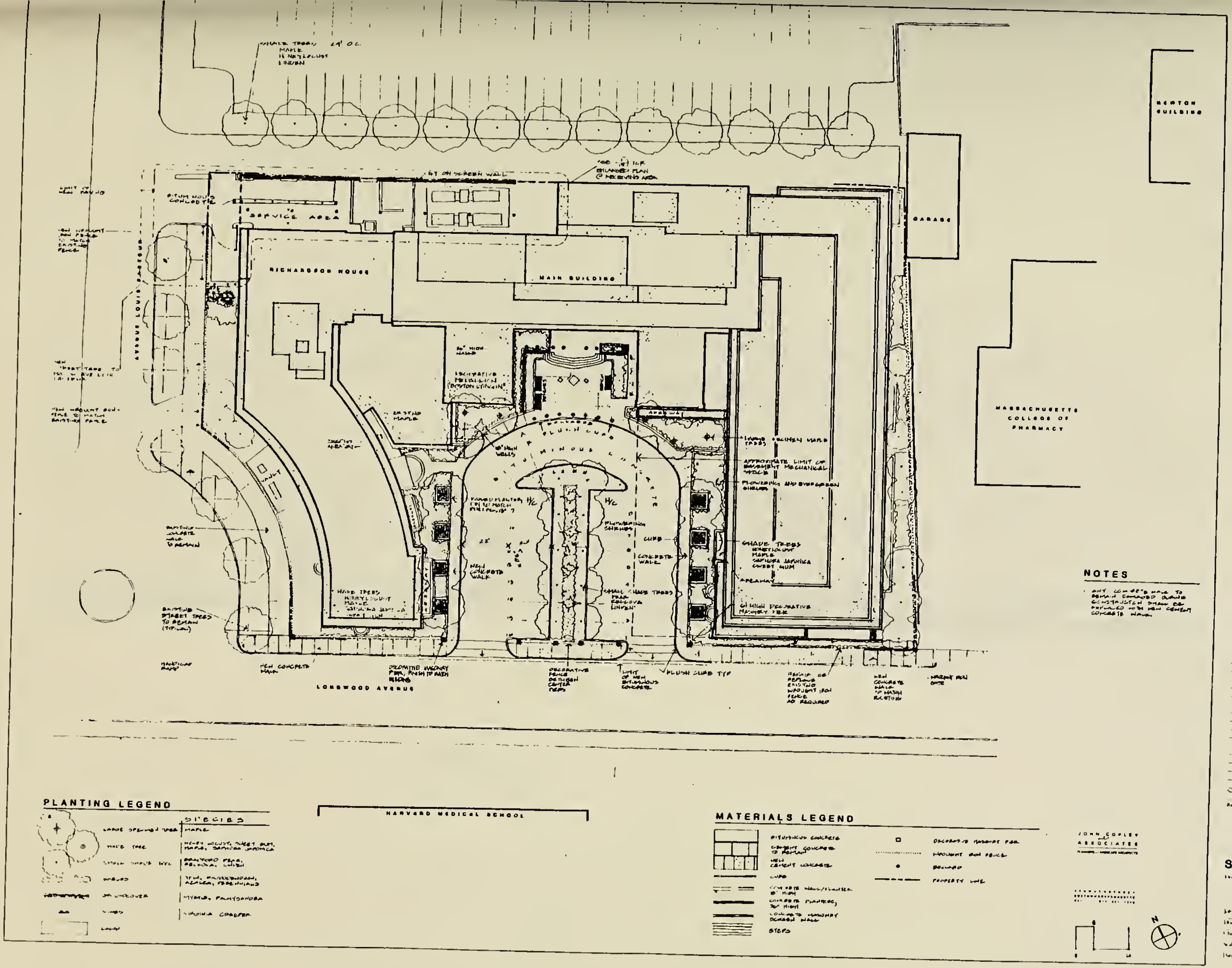
LOTTERO & MASON ASSOCIATES
Boston, MA
Electrical Engineer

ROBERT W. SULLIVAN INC
Boston, MA
Plumbing and Fire Protection Engineer

Drawing Title
SITE PLAN

Drawing No.
CD-1

Exhibit 2



TK&A

TSOI/KOBUS&ASSOCI
Architects Cambrid

L·M·R·
Brigham & Women's Ho
DEMOLITION & MECHANICAL RELOC

WILLIAM A. BERRY & SON, INC
Danvers, MA
Construction Manager

WEIDLINGER ASSOCIATES
Cambridge, MA
Structural Engineer

TMP CONSULTING ENGINEERS
Boston, MA
HVAC Engineer

LOTTERO & MASON ASSOCIATES
Boston, MA
Electrical Engineer

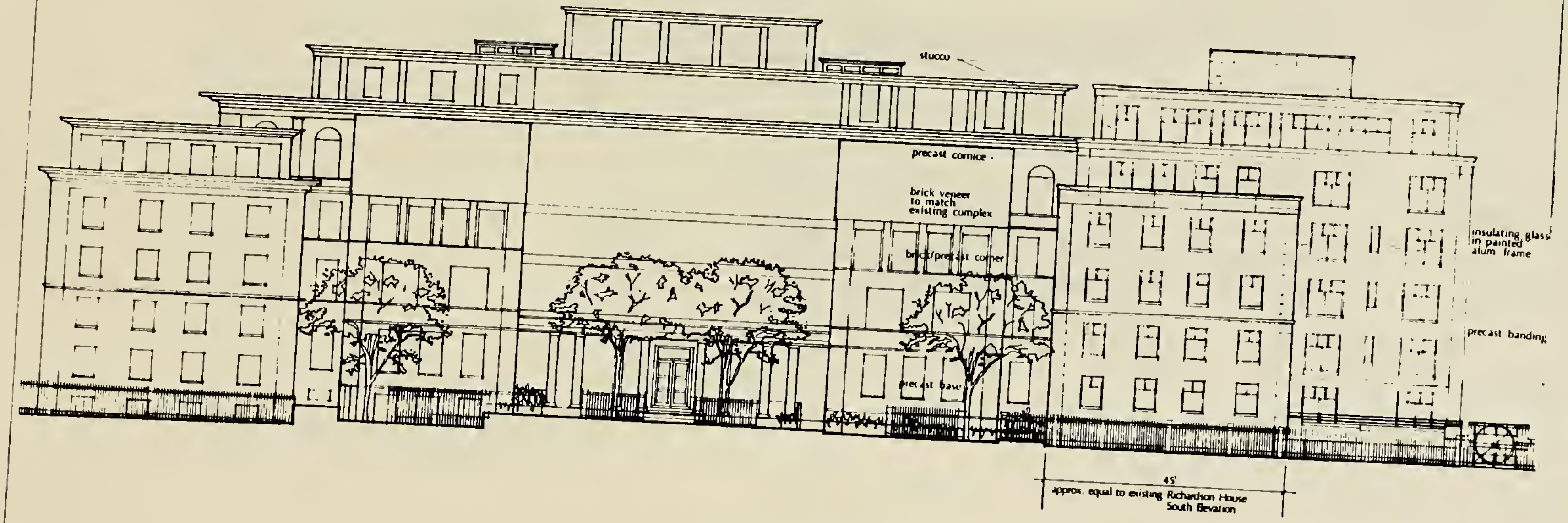
ROBERT W. SULLIVAN, INC
Boston, MA
Plumbing and Fire Protection Engineer

DEA SUBMISSION
SCHEMATIC DESIGN SUBMISSION
No. Description
Revisions

SITE PLAN
Drawing Title

Job Number
Drawn By
Checked
Scale 1" : 16'
Date

Drawing No.
3


stucco
precast cornice
brick veneer to match existing complex
brick/precast corner
precast base
insulating glass in painted alum frame
precast banding
45'
approx. equal to existing Richardson House South Elevation

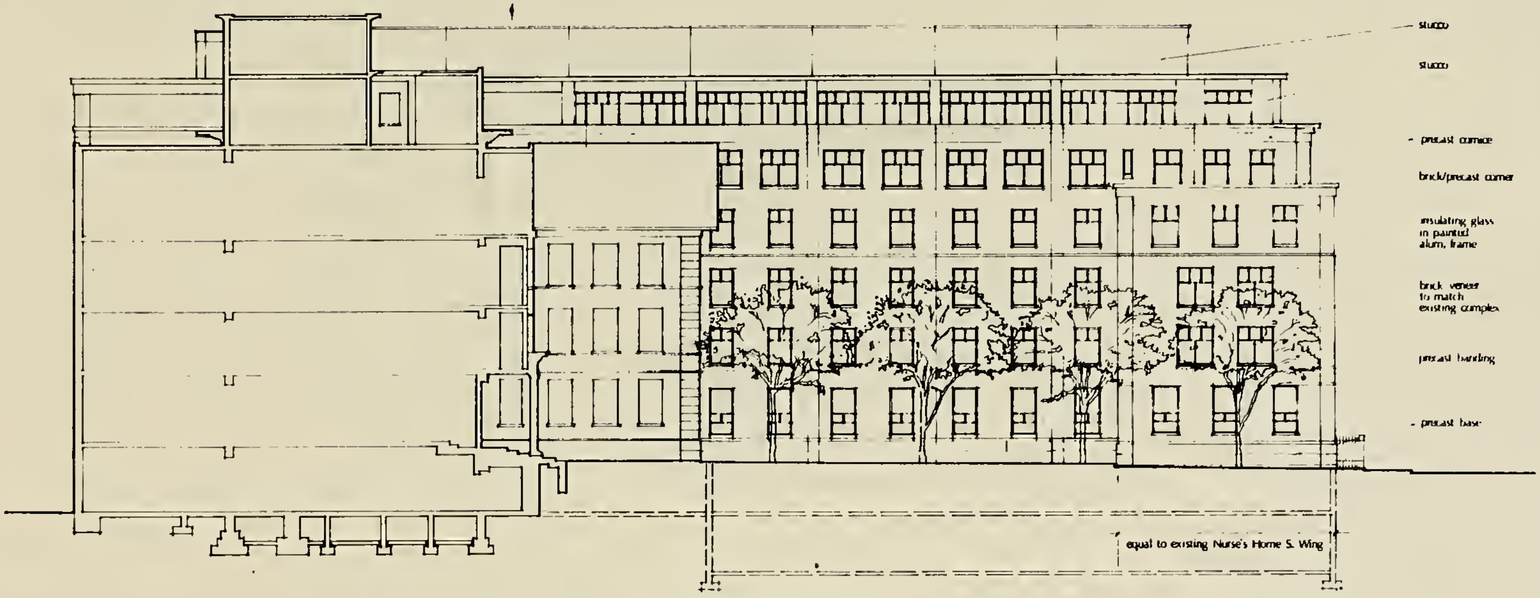
SOUTH B

TK&A

TSOI/KOBUS&ASSOCIA
Architects
Cambridge

L·M·R·

Brigham & Women's Hosp


stucco
stucco
precast cornice
brick/precast corner
insulating glass in painted alum. frame
brick veneer to match existing complex
precast banding
precast base
equal to existing Nurse's Home S. Wing

WEST

TK&

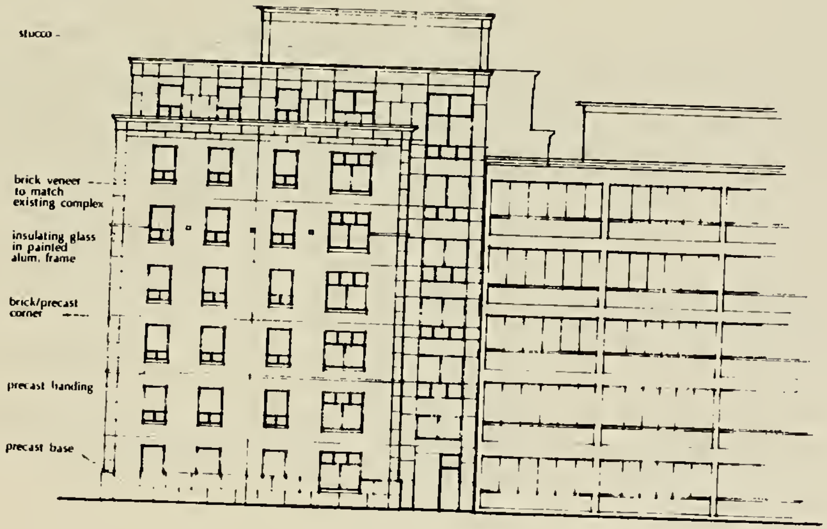
TSOI/KOBUS&ASSOC
Architects Cambr

L·M·R·
Brigham & Women's H

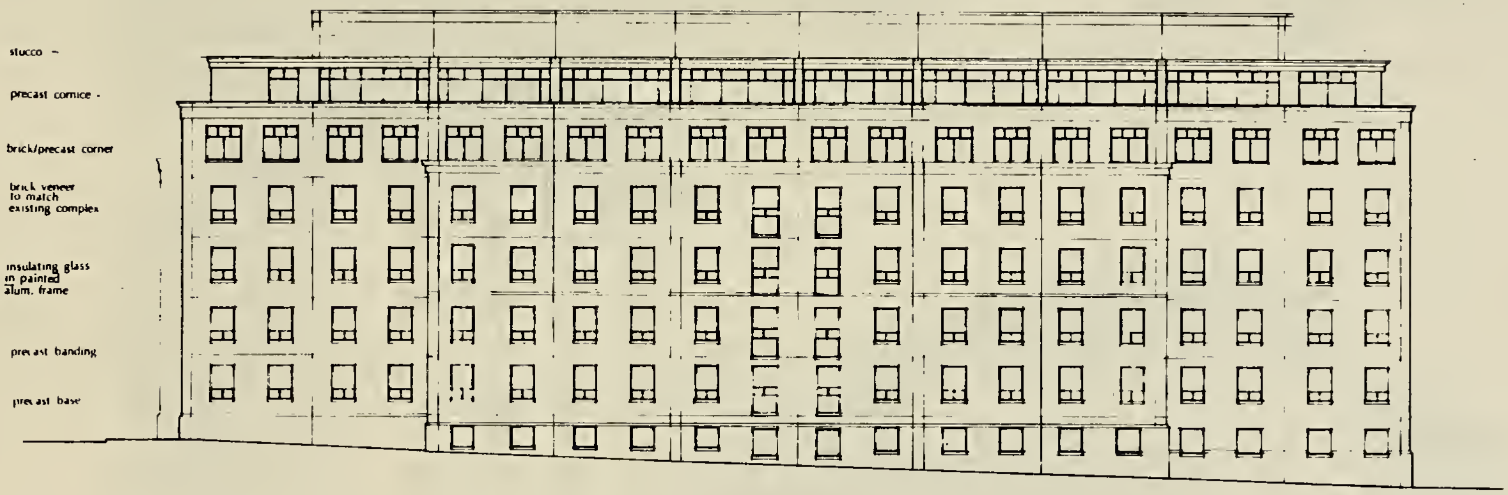
No. Description
Revisions

Drawing Title

Job Number Drawing No.
Drawn By
Checked
Scale
Date


stucco
brick veneer to match existing complex
insulating glass in painted alum. frame
brick/precast corner
precast banding
precast base

NORTH

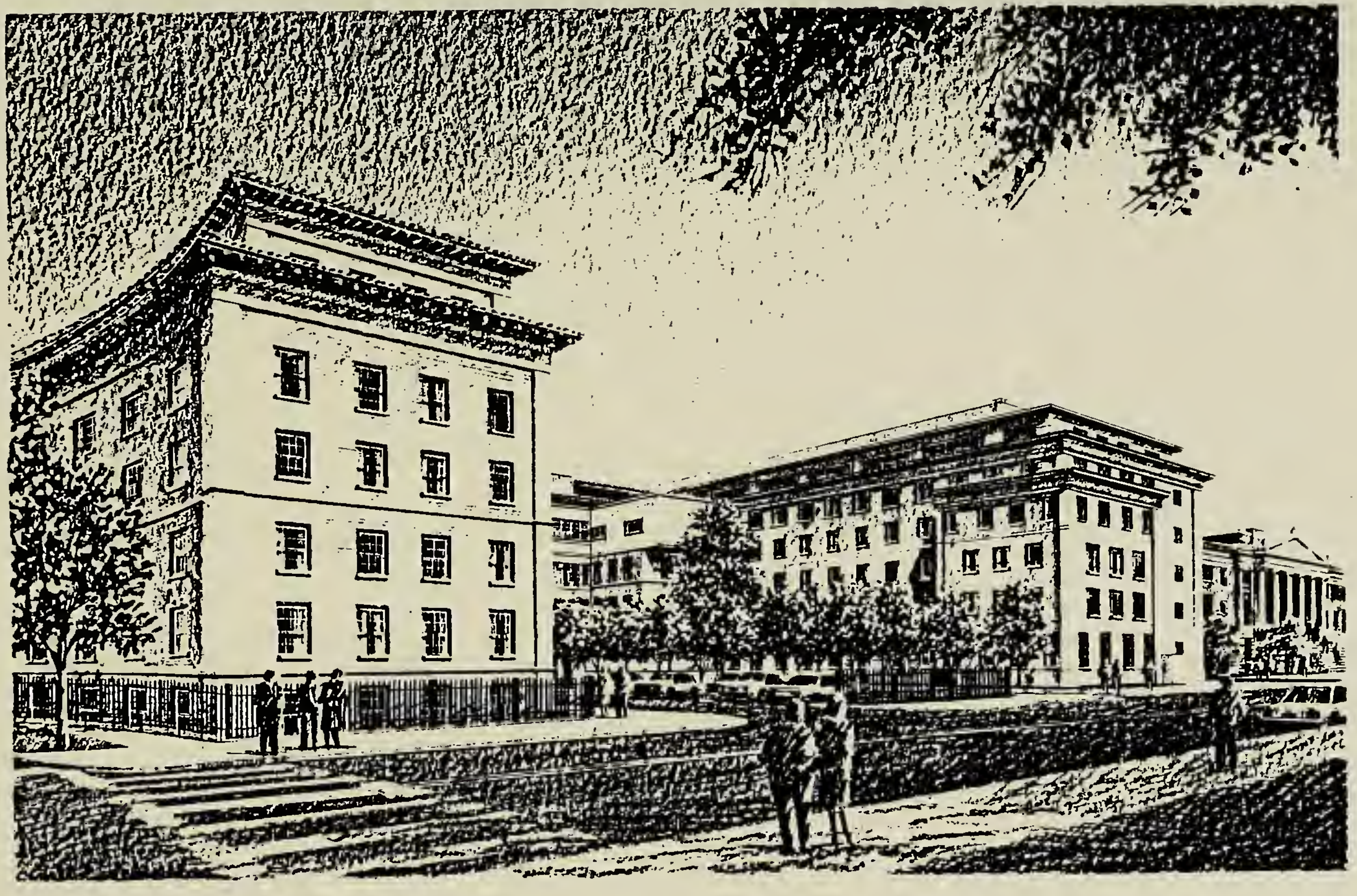

stucco
precast cornice
brick/precast corner
brick veneer to match existing complex
insulating glass in painted alum. frame
precast banding
precast base

EAST

TK&A

TSOI/KOBUS&ASSOCIATES
Architects Cambridge MA

L·M·R·C
Brigham & Women's Hospital



TK&A

TSOI/KOBUS&ASSOCIATES
Architects Cambridge MA

L·M·R·C
Brigham & Women's Hospital

No. Description By Date

Revisions

Drawing Title

Job Number
Drawing No
Drawn By
Checked
Scale
Date

ATTACHMENT 3

AIR QUALITY

TK&A

TSOI/KOBUS & ASSOCIATES
Architects

50 Church Street
Cambridge
Massachusetts 02138
617 491 3067

Edward T.M. Tsoi, AIA
Principal

Richard L. Kobus, AIA
Principal

Mark L. Hall
Senior Associate

Heidi Richards
Senior Associate

December 14, 1988

Mr. Larry Koff
~~Mr. Dick Garver~~
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Re: LMRC
TKA #88001

Dear Dick and Larry:

We have reviewed the previously submitted statements on air quality and noise and have added further information (see attached) to help clarify any concerns you may have.

If you have any questions, please do not hesitate to call.

Very truly yours,

TSOI/KOBUS & ASSOCIATES, INC.

Richard L. Kobus
Director

cae:5611

Jonathan P. Cohen
Associate

Linda L. Evans
Associate

Gertrude E. Levy, AIA
Associate

David M. Owens
Associate

AIR QUALITY

The LMRC will make use of a modern, fully energy efficient HVAC system for the building. Air handling units located in a sub-grade vault (below the existing courtyard) will provide general ventilation air and make-up air for laboratory fume hood systems. Air will be recirculated and tempered locally by internal vertical fan coil units. Laboratory fume hood exhaust systems will be combined when possible and controlled by variable volume controls to reduce fan volume, effluent discharge and energy consumption to the lowest possible levels. Research activities proposed for the building exist in the Longwood Medical Area; therefore, emissions from the building will be very similar to existing research buildings of BWH, HMS, Children's Hospital, etc. It is generally agreed that material dilution levels in fume hood exhaust systems are so great that it is virtually impossible to accurately measure levels of materials in the effluent stream. All systems are designed and maintained at or above levels required by NIH, EPA, DEQE, NIOSH and ASHRAE standards. The fume hood systems are checked periodically by BWH Safety Department to assure proper flow and filtration criteria are being met.

The building exhaust system will consist of two general exhaust fans, sixteen isolated and HEPA filtered fume hood exhausts and three combined chemical fume hood exhausts which are designed to meet or improve upon Massachusetts State Code and DEQE regulations. Exhaust air will be discharged vertically above the penthouse roof at between 1500 and 2000 feet per minute velocity to promote entrainment of effluence into the outside air stream and for dilution and dispersal well below allowable levels. The Massachusetts College of Pharmacy and the Boston Latin School being 80 and 120 feet away respectively from the LMRC should not be affected by the exhaust system.

Construction activity will generate temporary increases in air contamination, such as CO, NO and Hydro-Carbon Exhaust Emissions. Construction related dust can be minimized by wetting and other standard dust control procedures. Post-construction project related traffic will result in minimal long-term increases in these emissions. However, it is not anticipated that ambient levels will be significantly increased as a result of the new construction.

NOISE

The building's mechanical system will generate considerably less noise than conventional research buildings of this type since chilled water and steam are being supplied by MATEP and no boilers, chillers and cooling towers are required. Existing cooling towers, compressors and air handling units will be removed during demolition to interior locations, thus considerably improving aesthetics and reducing noise levels. The air handling units that are required are being placed underground (below the existing courtyard) in a new mechanical vault which should provide the highest level of noise isolation.

Penthouse exhaust fans will be selected on the basis of sound power rating, thus the quietest fan size will be chosen to handle design CFM and static pressure requirements. Stack discharge will be vertical at an elevation above all nearby buildings. This noise emission will be directed upward. Based on stacked discharges above and a minimum of 80 feet horizontally from the nearest receptor, our Acoustical Engineer (Shen-Milson Assoc., NY, NY) calculates that exhaust fan noise should not exceed 50 dBA at the face of neighboring buildings. This would place noise levels from the LMRC well below standard noise levels (65-70 dBA) anticipated in similar urban settings taking into consideration traffic and proximity.

Noise levels generated during the construction phase of the project will comply with City of Boston's ordinances. Noise and vibration during foundation installation will be minimized because of the use of spread footing foundations.

Long-term noise increases are not anticipated as a result of increased traffic generated by the project.

SMA SHEN, MILSOM & ASSOCIATES, INC.
CONSULTANTS IN ACOUSTICS AND AUDIO VISUAL SYSTEMS

December 8, 1988

Tsoi/Kobus & Associates
50 Church Street
Cambridge, Mass. 02138

* Editor's Note: The mechanical system will now consist of three supply air handling units, two located in the basement vault and one in the penthouse mechanical room.

Source: Tsoi/Kobus & Associates APRIL 18, 1989

Att: Jansen Chang

Ref: **Longwood Medical Research Center**
BRA Noise Analysis

Gentlemen:

We have reviewed information you transmitted from the TMP Consulting Engineers, Inc. describing the mechanical systems proposed for the referenced project, and present the following comments regarding potential noise impact on the surrounding community.

The mechanical system will consist of four (4) supply air handling units located in a basement vault and a total of eighteen (18) exhaust fans in a penthouse mechanical room discharging via vertical stacks extending 5 to 10 feet above the penthouse roof.

There are no chillers, boilers or other significant noise producing equipment.

A. Supply Air Handling Units

The only connection to the outside from the supply units will be through a fresh air intake plenum which shall be provided with acoustical lining, sound attenuators, or filters, as required, to minimize noise emanation and avoid any disturbance to the community and meet all applicable City noise ordinances.

B. Exhaust Fans in Penthouse

Each exhaust fan will be selected considering its sound power rating. The quietest fan size will be chosen to handle design CFM and static pressure requirements.

Stack discharge will be vertical at an elevation above all nearby buildings thus noise emissions will be directed upward.

We estimate, based on the operation of 18 exhaust fans, an average of 20 feet of discharge duct within the penthouse, outlet velocities up to 2000 fpm, and stack discharges above and minimum 80 feet horizontally from the nearest receptor, that exhaust fan noise should not exceed 50 dBA at the face of a neighboring building.

This level should meet City noise ordinance levels.

Should you have any questions, kindly advise.

Very truly yours,

SHEN, MILSOM & WILKE, INC.

D. Milso

Denis Milsom

DM/sr

cc: F. Shen

88001

SHEN MILSOM
& WILKE, INC.

CONSULTANTS IN ACOUSTICS AND AUDIOVISUAL SYSTEMS

RECEIVED

MAR 23 1989

TSOI/KOBUS & ASSOCIATES
ARCHITECTS
CAMBRIDGE, MA.

LONGWOOD MEDICAL RESEARCH CENTER
A STUDY OF CONSTRUCTION NOISE & VIBRATION IMPACT AFFECTING MASSACHUSETTS COLLEGE OF PHARMACY

Submitted To:

TSOI/KOBUS & ASSOCIATES
50 CHURCH STREET
CAMBRIDGE, MASS. 02138

MR. JEFFREY CAUSEY, AIA

Prepared By:

SHEN MILSOM & WILKE, INC.
6 EAST 39TH STREET
NEW YORK, N.Y. 10016

REPORT NO.: 1839-1

20 MARCH 1989

A. INTRODUCTION

This study and report has been undertaken to evaluate the anticipated acoustical impact that construction of the addition to the Longwood Medical Research Center at 221 Longwood Avenue would have on the neighboring Massachusetts College of Pharmacy building.

Construction of the LMRC building is scheduled to begin in April 1989, and last for about two years. It will include demolition of an existing building on the site, some excavation and site preparation, and erection of a 6 story poured concrete structure with a brick exterior.

There will be some temporary shoring along Longwood Avenue, but otherwise there will not be any piledriving or similar operation generating extended duration noise and grounborne vibration.

We forsee the following construction activities producing the major acoustical impact on neighboring buildings.

1. Demolition of existing building - jackhammers, wrecking ball (?), bulldozers, front-end loaders, cranes, and heavy trucks.

2. Excavation and site preparation - bulldozers, backhoes, jackhammers, and heavy trucks.

3. Erection of structure - hammering, heavy concrete delivery trucks.

These activities primarily occur during the first one-third of the construction period. The remaining construction is relatively quiet or takes place inside the shell of the building. Trucks delivering building materials would be an ongoing source of some noise.

This report also offers suggestions that may be implemented by LMRC and Mass. College of Pharmacy to lessen or mitigate the impact of these noise and vibration transmissions.

B. ESTIMATED LEVEL OF NOISE & VIBRATION

The actual level of construction noise depends heavily on the way the equipment is operated, the age and condition of the machinery, and the specific environment in which the equipment is operated, i.e., the noise will be higher if the equipment is in a confined area as opposed to a large open site.

Table 1.0 gives a range of operating noise levels at 50 feet away from the equipment.

We have indicated by asterisk, the equipment expected on the LMRC site. Other equipment such as generators and compressors may be needed, but we would assume that they will be sound attenuated and/or located in enclosures to minimize noise emission.

Construction generated vibration is difficult to predict. There will not be any piledriving, therefore,

groundborne vibration should occur only during heavy demolition and would be a sudden impact shock and not a continuous or lengthy disturbance.

We would not expect normal construction operations to cause any perceptible vibration in the Massachusetts College of Pharmacy building.

C. MASSACHUSETTS COLLEGE OF PHARMACY BUILDING

The MCP building is of concrete construction with a brick exterior which provides good noise isolation, but it has single paned 1/4" glass, metal framed operable windows (casement type) that do not seal well and thus permit significant outdoor noise transmission.

The end of the building nearest LMRC contains labs and classrooms in the basement, first, and second floors (the second floor classroom is a large lecture hall which is the only space not air conditioned at this end of the building) and a library on the third floor with some tutoring/study rooms along the end of the building facing LMRC.

The most critical rooms are the classrooms, especially the large second floor classroom, where excessive noise would seriously interfere with normal class functions.

We estimate that the windows presently reduce noise transmission by only about 25 dBA when closed. Of course, when they are open there will be less than 10 dBA difference outside to inside.

Another factor which influences the disturbance of outside noise is the ambient sound level within the building, usually due to the air conditioning system. We observed that the first floor classrooms and labs were quite noisy which would "mask" much of the outside noise intrusion. On the other hand, the second floor classroom has little ambient noise so that outside sounds would be highly obtrusive even when at only moderate levels.

The basement and first floor classrooms and labs have interior noise levels of about 45 to 50 dBA, while the second floor classroom and third floor library have quiet ambient levels of 35 to 40 dBA. Ideally, outside noises should not be any greater than 10 to 15 dBA above the room's ambient to avoid distracting most of the students and interfering with voice communication. This means that construction noise should be no higher than 60 dBA in the lower levels spaces and 50 dBA in the upper two floors to avoid disturbing teaching functions.

D. COMMENTS AND RECOMMENDATIONS

If we assume, as an average, that occasional operation of major construction equipment on the LMRC site will produce a noise level approximating 85 dBA at the nearest windows at the west end of the MPC building (5 to 10 dBA less at north and south facades), then the existing closed windows will reduce this noise to 60 dBA. This would be tolerable in the lower levels but excessive for the upper floors.

With open windows, the noise would be objectionably high in all spaces (75 to 80 dBA intrusion levels).

It may be possible to install a glass or plexiglass storm window treatment just inside the existing windows which would increase the overall sound barrier capability to 35 dBA or greater depending on glass thickness, air space between glass, and how well both windows can be sealed. This treatment would reduce construction noise transmission to 50 dBA or less, which would be acceptable in all spaces. It is necessary, however, that each space be air conditioned because the windows should not be opened during the first summer when most of the noise will occur.

We offer the following list of treatments and procedures to lessen the levels and impact of construction noise at this sensitive site.

1. Choose construction methods and equipment that will generate the least noise and groundborne vibration.

2. Require all contractors to use only well maintained equipment with properly functioning mufflers and engine enclosures. The General Contractor should be required to continuously monitor the equipment and operations on site and halt any that are excessively noisy.

3. Erect a solid plywood construction fence along the east side of the construction site at least 8 feet tall to provide some shielding for the Mass. College of Pharmacy.

4. Any compressors, generators, or other noise producing machines shall be located and shielded to minimize noise impact on all surrounding buildings.

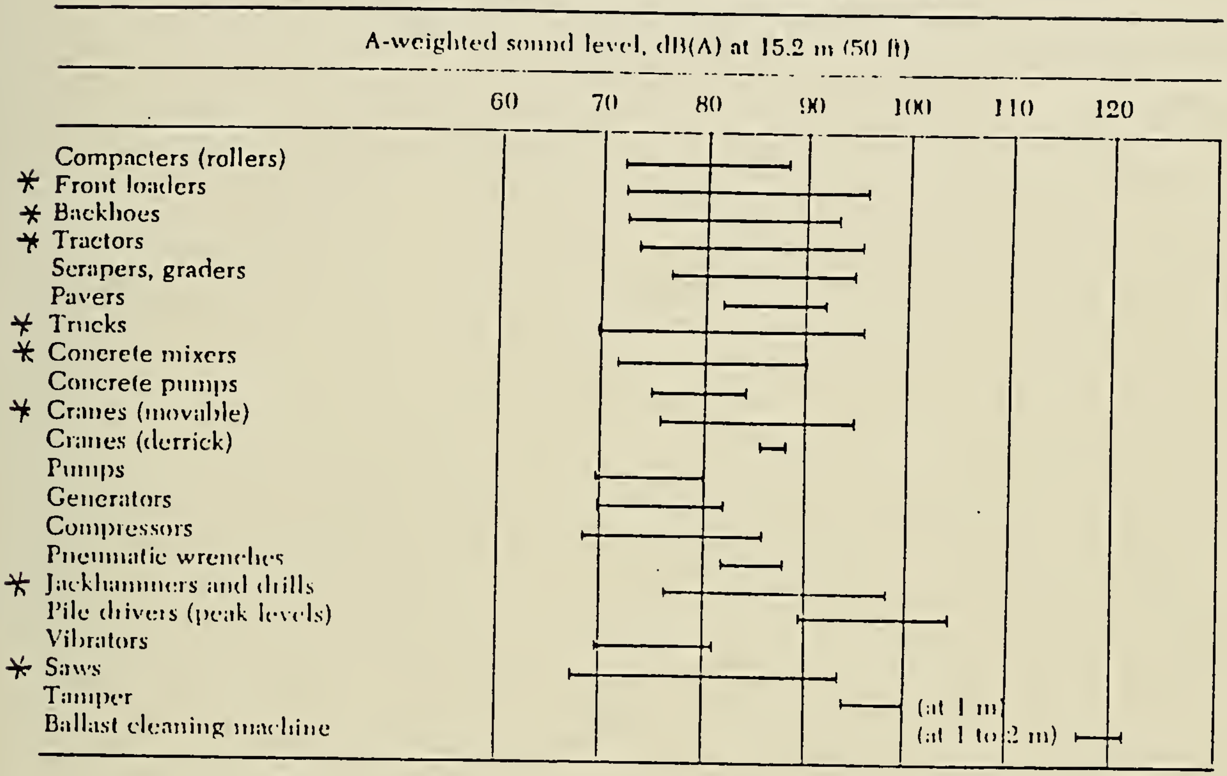
5. Truck staging areas shall be selected to avoid noise disturbance to the MCP building.

6. All pneumatic tools such as jackhammers, shall be equipped with exhaust air mufflers.

The above summarizes our comments and recommendations.

TABLE 1.0

A-Weighted Sound Level Ranges of Construction Equipment



From HANDBOOK OF NOISE CONTROL by Cyril M. Harris

* EQUIPMENT EXPECTED ON LMRC SITE.

EN
SOM
ASSOCIATES, INC.
t 39th St. N.Y., N.Y. 10016

Project LONGWOOD MEDICAL RESEARCH CENTER

Title CONSTRUCTION EQUIPMENT NOISE

Scale

Date

Drawn by:

Job #

Drawing No. SK-1

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